THE GARDEN JOURNAL

OF THE NEW YORK BOTANICAL GARDEN

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November 7—December 8, 1958—Chrysanthemum Show in Conservatory of The New York Botanical Garden.

December 4, 1958—Holiday House Tour, sponsored by the Volunteer Associates of The New York Botanical Garden, of homes of U.N. Missions decorated in the Christmas traditions of the respective countries.

December 12 - January 19, 1959 — Christmas Show in the Conservatory of The New York Botanical Garden.

January 8, 15, 22, 29, 1959 — Downtown Lecture Series sponsored by the Volunteer Associates of The New York Botanical Garden.

February 4, 1959—Annual Members' Day of The New York Botanical Garden; guest speaker, Dr. William C. Steere, Director of the Garden.

February 10, 1959—Theatre Benefit sponsored by the Volunteer Associates of The New York Botanical Garden: "Daarlin' Man" starring Shirley Booth and Melvyn Douglas.

THE GARDEN JOURNAL
of The New York Botanical Garden

DOROTHY EBEL HANSELL
Editor

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AMONG OUR CONTRIBUTORS

SAMUEL H. GOTTSCHO has been a professional photographer of architecture and gardens since 1925; eighty-three years old, he is still active in this profession as senior member of Gottscho-Schleisner, Inc. His book WILD FLOWERS, HOW TO KNOW AND GROW THEM, published in 1943, was the result of extra-curricular interest in the study and photography of wild flowers which began in 1943 . . . Another octogenarian is CHARLES A. ROBINSON who retired in 1953 after gardening in England and this country for more than half a century. A charter member of the Toledo, Ohio, Men's Garden Club, he was the first recipient of the club's bronze medal for achievement in horticulture...HELEN (MRS. I. MARION) KEISTER HODGE and her husband have won new laurels with their roses: eleven ribbons at the Bethesda-Chevy Chase Flower Show on September 13, fifteen ribbons at the Falls Church Flower Show on September 20, and the Garden Club of America sweepstakes award, also the gold certificate of the American Rose Society at the flower show of the Warrenton Garden Club on September 26, 27, 1958. Mrs. Hodge, a third generation Virginian, is a member of the American Rose Society, the Potomac Rose Society, the Arlington Rose Garden Foundation, and the Falls Church Garden Club and plays an active part in the affairs of these organizations...HOWARD W. SWIFT, Assistant to the Curator of Education and Horticulturist of The New York Botanical Garden, has a keen eye for beauty in nature and paints a picture by word and camera of his recent holiday on the Gaspé Peninsula . . . CARLTON B. LEES, who is Horticulturist at Kingwood Center, is in charge of the landscape planning, the perennial collections, and the seasonal displays of annuals and bulbs; designs the staging of the flower shows and art exhibits held at Kingwood; edits the KINGWOOD CENTER NOTES, and teaches a course in "Budget Landscaping." A native of Connecticut and a graduate of the University of Connecticut, Mr. Lees did graduate work at Cornell, was on the staff of the Brooklyn Botanic Garden as assistant horticulturist and taught landscape design at West Virginia University . . . GERTRUDE B. (MRS. PHILIP) FOSTER is Editor of the Herb Grower Magazine ... J. FRANKLIN STYER and his son John F. Jr. operate the well-known Styer's Nurseries at Concordville, Pennsylvania. To cite a few of his other activities, Mr. Styer is treasurer of the Pennsylvania Horticultural Society, a director of the American Horticultural Council and member of its commission on nomenclature, chairman of the committee on nomenclature and of the committee on botanical gardens and arboretums, both of the American Association of Nurserymen ... T. H. EVERETT is Curator of Education and Horticulturist of The New York Botanical Garden, lecturer, and author of many magazine and newspaper articles on gardening as well as several books ... JAKE GERLING who is superintendent of Maintenance, Parks and Playgrounds of Rochester, New York, photographs, writes and talks about his hobby —noteworthy trees and shrubs . . . DR. GEORGE H. M. LAWRENCE is the Director of Bailey Hortorium, Cornell University.

CREDIT FOR ILLUSTRATIONS

We are indebted to the Display Committee, Mrs. Charles Burlingham, Mrs. Richard S. Meredith, Mrs. Donald B. Straus, for the selection of the front cover illustration; pp. 186, 187, 188, Samuel H. Gottscho; pp. 194, 195, 196, 197, Howard W. Swift; pp. 198, 199, 200, Kingwood Center; pp. 202, 203, J. Franklin Styer; pp. 204, 205, 206, 207, T. H. Everett; pp. 208, 210, Jake Gerling; p. 209, E. N. Mitchell; p. 221 E. N. Mitchell; also p. 190, sweet peas, p. 191, Christmas rose, p. 192, holly and mistletoe, p. 193, prairie rose, p. 201, high-bush cranberry and milkweed, p. 213, turkey oak, p. 214, prickly pear — all by Charles C. Clare, Jr., botanical artist at The New York Botanical Garden.

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THOREAU AND WILD FLOWERS

By **Samuel H. Gottscho**

The material quoted from the Journals of Henry David Thoreau is used by the kind permission of the publishers, Houghton, Mifflin Company.

THAT dainty sprite of the May woodland, the magenta fringed polygala, occasionally, but not often, occurs in a white form. On May 23, 1853, Thoreau discovered this rarity in the Harrington woods and commented in his journal of that date as follows: "An abundance of pure white fringed polygalas, very delicate, by the path at Harrington's mud hole. Thus many flowers have their nun sisters dressed in white."

In Concord, Massachusetts, resides Mrs. Leslie Anderson, whose forebears have lived there for many generations. She has given much time to the study of wild flowers that grow in the locations mentioned by Thoreau, and she found these white fringed polygalas still flourishing in the same spot after nearly one hundred years.* A few years ago she took me to this place and I was privileged to see and photograph these flowers—the hundredth generation of the same plants that Thoreau had observed. Here was the same bit of woodland, where he had poked aside the fallen leaves to find these lovely and unusual wild flowers. Thus, if its growing conditions be not disturbed, a plant species can almost attain immortality. A century has passed, yet these plants still carry on.

As a young man I had been interested in Henry David Thoreau, having read WALDEN and his other books, having made a pilgrimage to Concord in 1908 and taken photographs of Walden Pond. These negatives today are prized posessions. After marriage I became seriously interested in photography, which later became my profession. This absorption lessened my interest in Thoreau, although his books were always near at hand, often to be read to find them, as always, stimulating and refreshing.

In 1943, I became deeply interested in our native wild flowers which brought about the collection of many books about them, wherein I was constantly confronted by quotations from Thoreau's Journals. This renewed my interest in the man and his writings, but now from the natural history and botanical angle in addition to an even greater appreciation of his philosophy. I read several of the most important biographies, the entire fourteen volumes of the Journals, as well as much descriptive and critical material about him and his books.

The reading of the Journals made me aware of the breadth of his botanical interests. I shall endeavor to acquaint you with Thoreau as an amateur botanist of some attainment and with a particular love for wild flowers which transcended mere knowledge of botanical details and identification. I shall try, by his writings in the Journals about them, to prove his contribution to the literature of wild flowers. But for fuller understanding, the publication history of these fourteen volumes should be known.

For many years, Thoreau had observed the progress of the seasons. Out every day in all kinds of weather, winter and summer and often at night, he meticulously recorded, day by day, what he had seen and philosophized how it affected him.

These writings are contained in thirty-nine, closely-written blank books which, after his death in 1862, became the property of his sister Sophia. In 1876 she bequeathed them to his intimate friend, Harrison G. O. Blake. The general reading public had no access to these records until 1881. Mr. Blake selected excerpts mainly dealing with nature, and a first volume, entitled EARLY SPRING IN MASSACHUSETTS, appeared that year and was followed by SUMMER in 1884, WINTER in 1887, and AUTUMN in 1892. In these natural history interest was stressed rather than the philosophic thought or moralities. While THE WEEK ON THE CONCORD AND MERRIMACK RIVERS and later WALDEN had called atention to Thoreau as philosopher and, to some degree, as naturalist, Thoreau's reputation as the latter stems from the publication of these journal extracts. After Mr. Blake's death, the thirty-nine manuscript journals were willed to his friend, E. Harlow Russell. Then in 1906, the complete Journals were published in fourteen volumes, averaging nearly five hundred pages in each. However what had been published previously out of these manuscripts was only a small part of what was subsequently revealed by the publication of the complete material.

These journal pages present him as philosopher, moralist, humanitarian, economist and, last but not least, as reporter on all aspects of nature as found in Concord and elsewhere. And in this last category he appeals to those interested in general natural history as well as to those who confine themselves to special branches, such as birds or wild flowers.

To his nature observation, he brought a natural endowment of keen sensory perception and in these journal entries one learns much of his personal reactions to the sights, sounds and smells encountered each day.

His vision was extremely sharp at great distances. He claimed he could distinguish an elm tree, several miles distant, without a glass! He was sensitive to the most delicate nuances of color—one becomes aware of this exceptional gift in the essay, "Autumnal Tints," developed from many pages of notes which appear in Journal Volume 9. This piece deals with the color and beauty of autumn foliage and the individual leaves of elms, maples, oaks, poplars, willows—in fact, the leaves of all the shrubs and trees of Concord. It is doubtful whether any writer on nature since has approached the breadth and detail of this study of autumn leaves.

His hearing was likewise acute. Thoreau could readily distinguish sounds inaudible to ordinary ears. He revelled in the delicate sighing of a soft breeze through the trees, or the louder hum

*See **"Rhodora,"** January 1952, page 28, for confirmation and further information about this particular stand of white fringed polygala, **Polygala paucifolia** forma **alba** Wheelock, as described by R. J. Eaton.

In view of Thoreau's earlier knowledge of this location, the statement that this station had been under observation for seventy-three years can be modified to over one hundred years.

of the new telegraph wire. This was his music, although he often would be enraptured by the tinkling of a cowbell or the sound of a hurdy-gurdy to the extent of composing a prose paean to these delectable sounds.

His keen sense of smell was that of a hound rather than a human. The fragrances of the spring season excited him beyond measure, and he could detect the fugitive perfume of slightly scented flowers that escaped the grosser sensibility of an ordinary person. When the wild grapes were ripe, he could readily find them by following the scent wafted to him as he rowed on the river.

Thoreau's observations on the botany and wild flowers of Concord and places he visited, take up many hundreds of pages. These descriptions include his field work, experiences which parallel those of ours today. Although only unpolished thoughts of the moment set down as notes, there are wild flower portraits of great charm, gems of nature writing, scattered through these pages, and these pieces about species and families have been quoted by later writers.

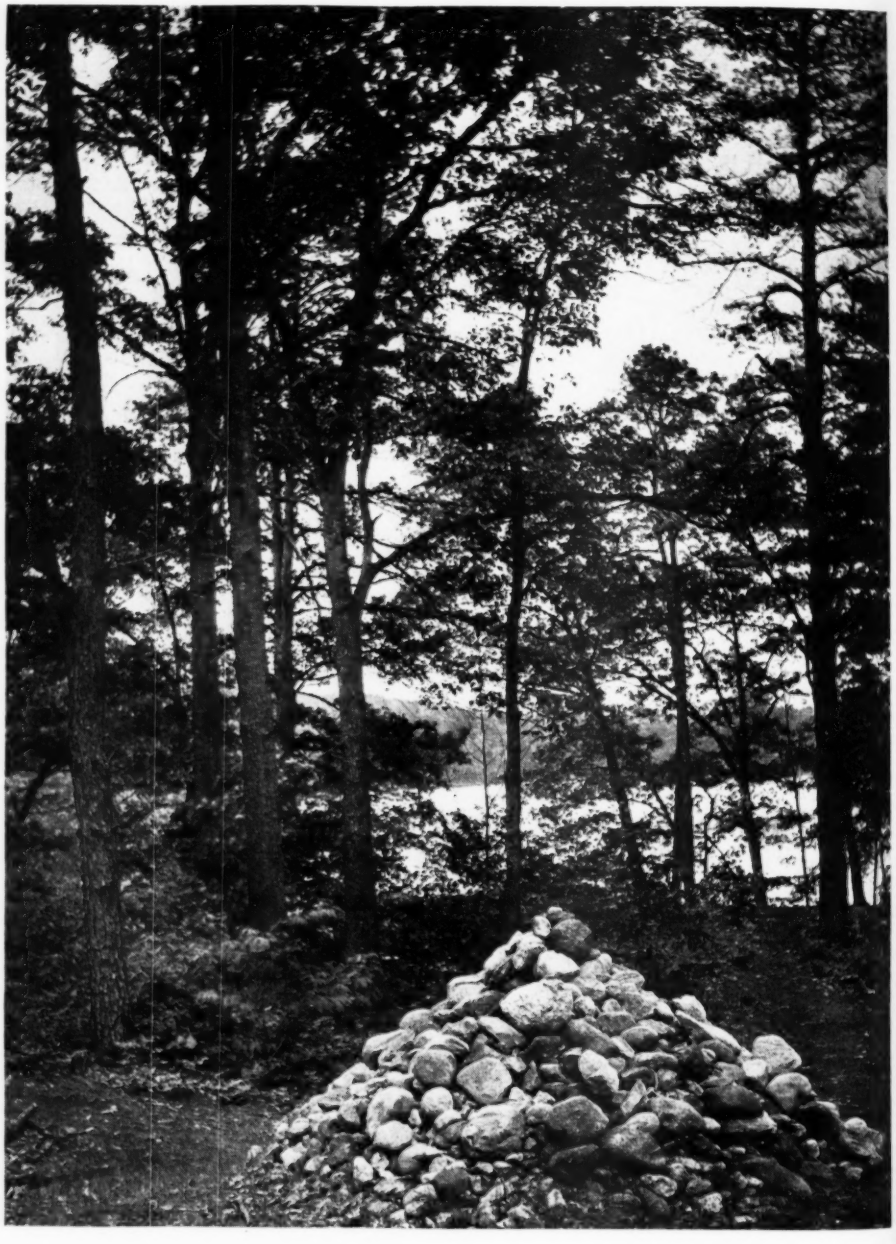
What was the secret of Thoreau's charm in treating of wild flowers? Foremost he was a good writer, with keen powers of observation beyond the ordinary and with an absorbing interest in botanical subjects. He was very responsive to the beauty of a wild flower, and it aroused in him a poetic feeling which was reflected in his prose.

But what of him as a botanist? In Volume 9, page 157, he states that he never studied botany, and therefore we can assume it was not included in his courses during the four years he spent at Harvard. Botany did not seriously interest him in his early years. Not until 1850, when thirty-three years old, are there many references to botany or wild flowers in the Journals. Thoreau becomes reminiscent in Volume 9, page 156, December 4, 1856, and tells us he began to use Jacob Bigelow's PLANTS OF BOSTON AND VICINITY, his first reference book, about 1837. Its only value then was to help him identify the plants and flowers of Concord and to teach him their popular names and the locale they favored. However, he learned them without system and they were soon forgotten. He was not inclined to pluck them or have them about the house. He also could have used Mrs. Almira H. Lincoln's FAMILIAR LECTURES ON BOTANY which was a standard textbook of the academies and female seminaries of that period; he never mentioned it in the Journals, either being unaware of its existence or not holding it in high esteem.

However, about 1850, he began to have a more serious interest, which may have been developed after the first edition of Gray's Botany became available in 1848. And, he learned the hard way. I have copies of these two books before me. In contrast to our present-day popular guides with their excellent illustrations in line and color, Thoreau had to depend on a careful study of descriptions couched in botanical language.

He began to bring home plants and flowers to press and study, using his straw hat to contain them, as he states in Volume 4, page 133, June 23, 1852: "I am inclined to think that my hat, whose lining is gathered in mid-way so as to make a shelf, is about as good a botany-box as I could have and far more convenient, and there is something in the darkness . . . which preserves flowers through a long walk."

In 1850 he began to note the flowering dates as well as to list the plants seen on his daily walks, with particular mention of those that might bloom



The cairn of stones, deposited by early visitors and added to by later ones, marked the supposed site of Thoreau's hut at Walden Pond. The actual site, some thirty or forty feet distant, was discovered a few years ago by Roland Robbins. Photograph taken by Samuel H. Gottscho in 1908.

This is the cove at Walden Pond. Photographed by the author in 1952, it almost duplicates conditions existing in Thoreau's day and is part of the unspoiled section of Walden Pond that the devoted members of the Thoreau Society are trying to save for posterity.

shortly. He visited a special plant four or five times during a period of two weeks, often traveling twenty-five to thirty miles in a day to call on these friends of the woods and fields.

Thoreau had read many treatises on natural history and botany. His proficiency in Latin enabled him to read Linnaeus in the original, and he claimed this work taught him more about botany than all the other works he had read or consulted. With his scientific approach, and his observant eye for color, form and other less conspicuous detail, he was able to note differences in plant and flower structure that would elude the ordinary observer.

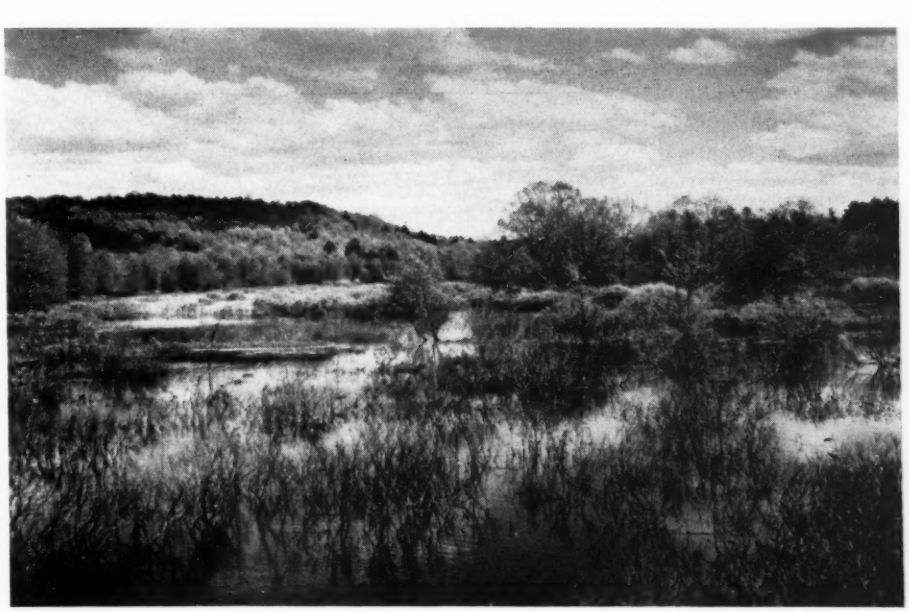
To acquaint you with the type of nature laboratory in which Thoreau worked, let me quote from Volume 2, page 38, June 20, 1850: "And then for my afternoon walks, I have a garden, larger than any artificial garden that I have read of and far more attractive to me, — mile after mile of embowered walks, such as no nobleman's grounds can boast, with animals running free and wild therein as from the first, — varied with land and water prospect, and, above all, so retired that it is extremely rare that I meet a single wanderer in its mazes."

This and the following quotation from page 52 of the same volume give a picture of the unspoiled country available to Thoreau as an almost solitary observer: "I can easily walk ten, fifteen, twenty, any number of miles, commencing at my own door, without going by any house, without crossing a road except where the fox and mink do . . . There are square miles in my vicinity which have no inhabitant. First along by the river, and then the brook, and then the meadow and the woodside. Such solitude!"

The nature lover, today hampered by "No trespass" signs, fences and all kinds of impediments to a cross-country jaunt, must envy Thoreau's unconfined freedom of movement.

As time progresses, he continues each season to note the blooming of the flowers, to visit and watch their development. He is often plagued by quandaries of identification, particularly those of the rushes, sedges, and grasses which are a challenge to skilled botanists of today. He begins to study wild flowers and plants in connection with their habitat, speculating why certain ones are found in certain places, anticipating our present attention to ecological relations.

Let no one surmise that his interests all through these years were purely academic. Far from it, he likened his feeling to the love that children bear toward wild flowers, their instinctive appreciation being a fuller one than that of the botanist. In a similar vein, he writes of the botany books of his time in Volume 3, page 252, January 30,



This is Fair Haven Hill across the flooded meadows; it is frequently mentioned in the Journals.

This rhodora is a possible descendant of the shrub in the Ministerial Swamp that may have inspired Emerson's poem.

Marsh-marigolds, *Caltha palustris*, are, in Thoreau's words "bright yellow suns of the meadow."

1852: "The natural system may tell us the value of a plant in medicine or the arts or for food, but neither it nor the Linnaean, to any great extent tells us its chief value and significance to man, which in any measure accounts for its beauty, its flower-like properties. There will be pages about some fair flower's qualities as food or medicine, but perhaps not a sentence about its significance to the eye, as if the cowslip were better for greens than for yellows."

As the leaves of the cowslip, also known as the marsh-marigold, were used then as they are yet by country folks as pot herbs, we can forgive this little pun.

Later in this volume, page 480, April 29, 1852, he remarks further about marsh marigolds: "These bright-yellow *suns* of the meadow, in rich clusters, their flowers contrasting with the green leaves, from amidst the all-producing dark-bottomed water. A flower fire bursting up, as if through crevices in the meadow."

The bellworts come in bloom a little later and on page 56, volume 4, May 16, 1852, there is this charming description: "The sessile-leaved bellwort with three or four delicate pale-green leaves with reflexed edges, on a tender-looking stalk, the single modest-colored flower gracefully drooping, neat, with a fugacious, richly spiced fragrance, facing the ground, the dry leaves, as if unworthy to face the heavens. It is a beautiful sight, a pleasing discovery, the first of the season,—growing in a little straggling company, in damp woods or swamps."

Nearby there was also growing *Aquilegia canadensis*, the columbine, which inspired him to comment Volume 4, page 57, May 16, 1852 in the following manner: "Methinks the columbine *here* is more remarkable for growing out of the seams of the rocks than the saxifrage, and perhaps better deserves the latter name. It is now in its prime, ornamental for nature's rockwork. It is a beautiful sight to see large clusters of splendid scarlet and yellow flowers growing out of a seam in the side of this gray cliff."

Further on page 99, Volume 4, June 14, 1852, he finds the season developing so fast that he cannot keep pace with the flower openings of each day: "How rapidly new flowers unfold! As if Nature would get through her work too soon. One has as much as he can do to observe how flowers successively unfold. It is a flowery revolution, to which but few attend. Hardly too much attention can be bestowed on flowers . . . Flowers were made to be seen, not overlooked."

One of Thoreau's favorite flowers of June and July is the purple fringed orchis. He often devotes a paragraph to this handsome and fragrant flower and, like many of our present-day observers, is often puzzled as to whether he has found the small species, *Habenaria pyscodes*, or the larger one known as *H. fimbriata* or *H. grandiflora*. He states in Volume 4, page 103, June 15, 1852: "Here also, at Well Meadow Head, I see the fringed purple orchis, unexpectedly beautiful, though a pale lilac-purple, — a large spike of purple flowers . . . why does it grow there only, far in a swamp remote from public view? . . . Is it not significant that some rare and delicate and beautiful flowers should be found only in unfrequented wild swamps? Where the most beautiful wild flowers grow, there man's spirit is fed and poets grow."

Two years later, Volume 6, page 337, June 9, 1854, he adds: "Find the great fringed orchis out apparently two or three days . . . growing in the luxuriant and shady swamp amid hellebores, ferns, golden senecios, etc., etc. I think that no other but myself in Concord annually finds it. That so queenly a flower should annually bloom so rarely and in such withdrawn and secret places as to be rarely seen by man! The village belle never sees this more delicate belle of the swamp."

Some of my early childhood recollections of wild flowers center about the wild roses, remembered as growing in an upland pasture and associated with tinkling cow-bells. They are frequently mentioned in the Journals and of par-

ticular interest is the statement in Volume 5, page 256, June 15, 1853: "Here are many wild roses northeast of Trillium Woods. We are liable to underrate this flower on account of its commonness. Is it not the queen of our flowers? How ample and high-colored its petals, glancing half concealed from its own green bowers! There is a certain noble and delicate civility about it —not wildness . . . I bring home the buds ready to expand, put them in a pitcher of water, and the next morning they open and fill my chamber with fragrance."

About the time that Thoreau began to study wild flowers, our black-eyed Susan, *Rudbeckia hirta*, had started to establish itself in New England. A native of the prairies, it came east in bales of hay and was quite rare in the beginning. Read what Thoreau says about it in Volume 6, page 383, July 2, 1854: "A cone-flower (new plant), *Rudbeckia hirta* (except that I call its disk not dull brown but dull or dark purple or maroon; however, Wood calls it dark purple), — in Arethusa Meadow. Saw one plucked June 25; blossomed probably about that time. Many yesterday in meadows beyond the almshouse. Probably introduced lately from the West."

It found conditions all through the eastern states much to its liking and today is one of the most common and beloved of all the wildflowers.

During his frequent boating trips on the river, Thoreau became well acquainted with the water plants as well as the willows and button bushes which lined the shore. In the many pages devoted to these "fluviatile excursions" he often mentions the pondeterias (pickerel weeds), the spatter docks, and the sagittarias (arrowheads), but of first importance are the white water-lilies. He watches their opening shortly after sunrise and records their closing about noon. He brings them home to enjoy their beauty of form and fragrance. He tells about the custom of the young men, picking water-lilies while engaged at the Sunday bath in the river and later bringing them to church. In volume 5, page 283, he rhapsodizes about the first water-lily of the season: "Exquisitely beautiful, and unlike anything else that we have, is the first white lily just expanded in some shallow lagoon where the water is leaving (laving?) it, — perfectly fresh and pure, before the insects have discovered it. How admirable its purity! How innocently sweet its fragrance! How significant that the rich, black mud of our dead stream produces the water lily,—out of that fertile slime springs this spotless purity! It is remarkable that those flowers which are most emblematical of purity should grow in the mud."

OUR FRONT COVER ILLUSTRATION

"I used to think I'd like to water flowers in the garden"

This lithograph by Honore Daumiér (1808-1879) from the collection of the late Edwin De T. Bechtel, long a member of the Board of Managers of The New York Botanical Garden, is used as our front cover illustration through the courtesy of the Metropolitan Museum of Art, to whom Mr. Bechtel bequeathed his collection of Daumiér and Callot prints.

It is instructive to note his similar thought a following year on seeing again the first water-lily, Volume 6, page 352, June 16, 1854: "*Nymphaea odorata*. Again I scent the white water-lily, and a season I have waited for is arrived . . . It is the emblem of purity and its scent suggests it. Growing in stagnant and muddy (water) it bursts up so pure and fair to the eye and so sweet to the scent, as if to show us what purity and sweetness reside in, and can be extracted from, the slime and muck of earth . . . What confirmation of our hopes is in the fragrance of the water-lily."

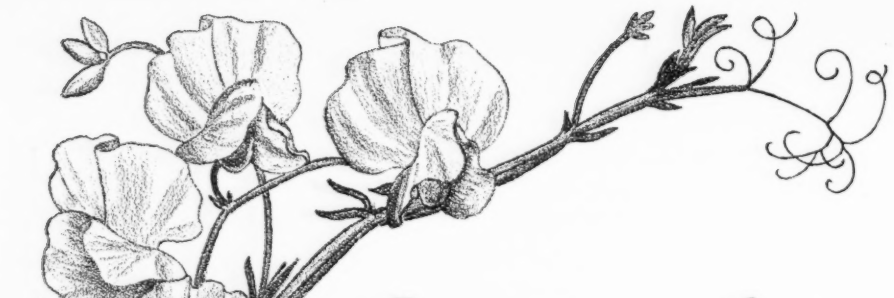
When he referred to another white flower as tobacco pipe, I soon learned from the context it was an early common name for Indian pipe, *Monotropa uniflora*. He poetically discourses about it in Volume 5, page 347, July 30, 1853, as follows: "The tobacco pipe has also pushed up there amid the dry leaves in the shade . . . Both stem and flowers and scales are a pure and delicate crystalline white. What to name it? Sheathed with delicate white scales. It reminded me of a maiden in her robes of purity who has always been nurtured in a shady and vault-like seclusion,—a nun of spotless purity . . . Pushing aside the doorway of dry leaves, three sisters of various heights issue from their hidden convent and stand side by side in the presence of the light . . . They come forth to be proved, . . . with hanging heads and faces to the ground under their pure white hoods and capes". . .

The fringed gentian is rarely found the second year in the same location, and to find and pay court to its beauty each year was almost a sacred quest. Thoreau mentions it very often and a fitting appreciation of its charm occurs in Volume 4, page 390, October 18, 1852: "It is too remarkable a flower not to be sought out and admired each year, however rare. It is one of the errands of the walker, as well as of the bees, for it yields him a more celestial nectar still. It is a very singular and agreeable surprise to come upon this conspicuous and handsome and withal blue flower at this season, when flowers had passed out of our minds and memories; the latest of all to begin to bloom unless it be the witch-hazel . . ."

Of this last of the season's blossoms, he expresses his pleasure and delight in Volume 3, page 59, October 8, 1851: "The witch-hazel here is in full blossom on this magical hillside while its broad yellow leaves are falling . . . It is an extremely interesting plant, — October and November's child, and yet reminds me of the very earliest spring . . . It stands here in the shadow on the side of the hill, while the sunlight from over the top of the hill lights up its topmost sprays and yellow blossoms. Its spray, so jointed and angular, is not to be mistaken for any other. I lie on my back with joy under its boughs. While its leaves fall, its blossoms spring. The autumn, then, is indeed a spring. All the year is a spring."

As an appropriate conclusion to these excerpts, let us consider the lowly skunk-cabbage whose assurance and faith in the coming of another spring is symbolic of immortality. In Volume 10, page 150, October 31, 1857, Thoreau has written: "If you are afflicted with melancholy at this season, go to the swamp and see the brave spears of skunk-cabbage buds already advanced toward a

(Continued on page 192)



Gardening in England at the turn of the Century

By **Charles A. Robinson**

I WAS BORN in the pretty little village of Sedlescombe, Sussex, England, on July 1, 1876. I went to school at the age of four, and before I was thirteen I had acquired all the education that was afforded the children of working parents in those days. There were no high schools, and only the fairly well-to-do could afford to send their children to private schools.

My father had for some fifty years been employed on a beautiful estate known as "Oaklands." The residence built of stone, as were the lodges at the entrances of the two-mile-long driveways, stood in a park of some thousand acres. It was owned by an old bachelor by the name of Hercules Brabazon. In the household were also his sister and her husband, a Major and Mrs. Combe, and their son, Harvey, with his wife and two sons, Harvey Jr. and Boyce. The staff included a butler, footman, valet, five to seven maids, coachman, grooms and three gardeners. Additional help for gardens and stables was called in from the farm as needed.

When I finished school, I went to work at "Oaklands" and continued there until I felt that a change would be to my best interest. I worked in other gardens and large fruit orchards at Battle, and then went to Eastbourne, a seaside resort on the south coast, where I was employed by a florist who had large nurseries, called "Roseacres," devoted for the most part to roses both under glass and outdoors. I spent considerable time budding roses. From my association with that nursery I obtained a private position also in Eastbourne, and while there Mr. Harvey Combe offered me the position of head gardener at "Oaklands." I accepted and remained at "Oaklands" until I came to America in 1911.

It must be remembered that the time of which I write was a good half century ago. In no other period of the world's history have so many changes taken place. As a matter of fact, the world in which we live today is an entirely different world from that at the end of the nineteenth century. With the changes have come vast improvements, and the lot of mankind generally has been immeasureably bettered. We as gardeners are principally interested in the quality of fruits, vegetables, trees, shrubs, flowers, and the improved methods in the management of lawns, gardens and grounds.

The beautiful lawns of England have been acclaimed the world over, and those at "Oaklands" were no exception. They were extensive and well kept. I do not recollect ever seeing a badly burned lawn from summer heat—and we never watered. We were never bothered with crab grass. The worst lawn pest was the pretty little English daisy, *Bellis perennis*, which was then as difficult to eradicate as crab grass has been in America until quite recently. We tried to combat the English daisy with a preparation known as "Fowlers Lawn Sand," but it was futile.

I can recall mowing lawns with scythes, and I well remember our first lawn mower built by Green — a long way removed from the fine mowers of today, but how we welcomed it. Tennis courts were of grass in those days, and the courts at "Oaklands" were situated just over the terrace wall in front of the house.

Unlike many old English homes, we did not have a formal garden, but we did have formal terraces and a terrace wall on the north and west sides of the house. Bedding, generally practised in those days but since fallen into disuse, compensated somewhat for the lack of a formal garden—and our bedding arrangements were extensive. The reception rooms faced west across an expanse of lawn and the terrace to a broad view of the park beyond. On either side of this lawn were flower beds, some twenty in all. There was also a similar arrangement on the lower lawn so called, on the northern side of the house on a lower level. Those beds (their surface was six inches higher than the lawn) were replanted spring and fall.

For the summer display we used geraniums extensively, zonals, bi-colors and tricolors, also the ivy-leaved and some of the scented kinds. Two of the favorite bedding subjects were a lovely yellow calceolaria and a large-flowered pink verbena. The calceolaria was easily propagated from cuttings placed in coldframes in September, protected from frost, and apart from pinching it needed no further attention until time for planting out in spring. The verbena could only be propagated from cuttings.

We used a wide variety of material and as far as possible avoided sameness. The pattern was never the same for two years running. We departed from this rule only once. The focal point in the bedding layout was a large oval bed in the center of each group of beds. One spring I planted these two oval beds to represent baskets, using wooden rods to form scalloped sides and longer rods for handles. I used pink-flowered, ivy-leaved geranium to cover the sides and handles and heliotrope to fill the basket. The beds made such a hit with the family and visitors that with but slight changes they were planted as baskets until I left.

The bedding was supplemented with specimen plants grown in pots and tubs of fuchsia, agapanthus and geraniums placed at intervals along the terraces. There were vases on the pillars of the terrace wall and wire baskets in front of the wall decorated with flowering and trailing plants.

In October we replanted the beds for the spring display, using myosotis, wallflower polyanthus, daisy and so on. These, interplanted with tulips of various colours and other spring-flowering bulbs, made a brilliant showing.

We had extensive perennial borders at "Oaklands" and thought them good, but few of the perennials of that day could begin to compare with their successors. Say what one will, it cannot be denied that the flowers of today far surpass any of bygone years.

Roses were a feature of the gardens at "Oaklands." It may interest and surprise many of you to know that the much-talked of tree roses of the last few years were commonplace in England in those long ago days. Most of the roses at "Oaklands" were grown that way and referred to as standard roses. We usually planted them in large circular beds — and large beds of tree roses of varying heights, with perhaps a row of dwarf roses next the grass, are a truly beautiful sight. I am not forgetting that modern roses are much more beautiful than the earlier varieties, but we did have some good roses in those days. One large heart-shaped bed in the angle of the lawn, planted with tree or standard roses was spectacular. For stock for the tree roses the dog rose, *Rosa canina,* was used; it is easily raised from both seeds and cuttings. We carpeted the rose beds with violas, and the result was very pleasing. We also used mignonette for the same purpose, and for its fragrance. In odd corners we planted nicotiana, night-scented stock, and others just for their fragrance; and there is nothing that can surpass lavender. Fragrance was a "must" in old English gardens.

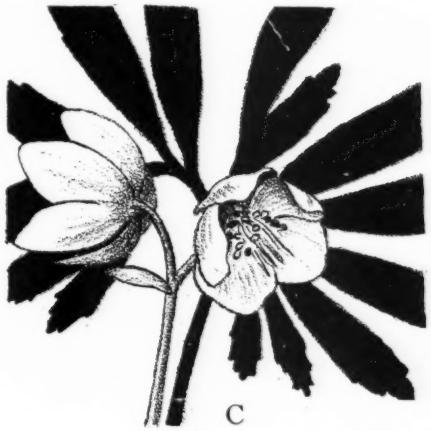
I have never been able anywhere in this country to grow sweet peas of the size and quality I grew in England. I sowed seed indoors in January and planted outside as soon as the weather would permit. I spaced the plants a foot apart in the rows, and they attained a height of eight or ten feet. We used step ladders to pick them! In England in those days Eckford was to sweet peas what Burpee is in America today. I was very successful as an exhibitor with Eckford's sweet peas—many had seven blossoms to a spray and the stems were unusually long. The English climate is ideal for sweet peas.

The Christmas rose, *Helleborus niger,* and violets were favorites at "Oaklands." The English climate is ideal for the Christmas rose. I planted it in groups so that it could be covered in winter with standard four-sash frames. The glass was protected with mats during the worst weather and air given at every favorable opportunity. The sash was removed entirely when weather permitted. Grown this way the flowers are clean, pure white, and the stems much longer.

Of violets we grew all the best varieties, both single and double. The plants were divided in early summer and set out in nursery rows in the garden; they were then placed in pits or frames in September.

The walled-in garden, approximately two acres in extent, lay to the west of the residence and was screened from the grounds by a heavy planting of shrubbery, chiefly holly and rhododendrons. There was a larger area outside the garden wall to supplement the walled-in garden. The wall was ten to twelve feet high with an overhanging coping, from which nets and other protective material were suspended in front of the fruit trees grown on the wall, to keep the fruit from frost and birds. The wall was practically covered with fruit trees, the most favorable locations being given to peaches, nectarines, and apricots. Pears and plums were grown on the wall also. The peaches, nectarines and apricots, as also the plums, were trained fan-shaped; the pears were either trained as espaliers or cordons. We grew 'Morella' and other cherries on the outside of the north wall; on the outside of the south wall we grew figs. Some of the largest pears I have ever seen were on those cordon-trained trees.

The glasshouses were inside the garden wall, two grape houses which we used to propagate the bedding material and to house the chrysanthemums when brought indoors in September; we always set them out during the summer. We grew a variety of plants for house decorating too, gloxinias, primulas, cinerarias, cyclamen, and others. We had a larger house for hothouse plants, also melons and the English cucumber 'Telegraph,' which is two feet long and of good quality. It is much used for exhibition, and I grew them in glasses to have them straight. I never saw melons grown outdoors in England, but they were grown successfully at "Oaklands" under glass.



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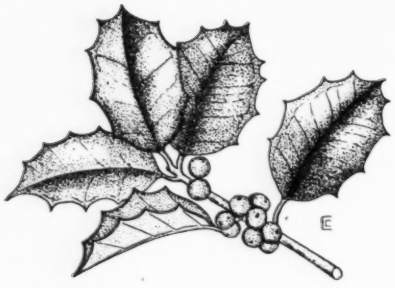
A border some twenty-five feet wide ran around the inside of the garden wall. The rest of the garden was laid out in squares of thirty-six feet intersected by paths. In the center of each side of a square and three feet from the edge of the path an apple or pear tree was planted. These trees were trained as espaliers. Annuals were grown in the narrow borders and vegetables between the trees. The trees were not permitted to meet at one corner so that a man with a barrow could get into the plots. The trees in my time were well established and bearing as well as trees so trained usually do; I would never advocate growing apple or pear trees as espaliers, but it was a custom in those days. The trees of necessity have to be summer pruned with the result that they get badly infested with the woolley aphis, then described in England as "American blight."

It was a standing order at "Oaklands" that if at all possible garden peas were to be had every day. Harvey Combe was an epileptic, and his doctor had ordered him to eat peas twice a day. This was long before the day of frozen foods. I did pretty well, however, for I made a sowing every ten days of both an early and late variety of peas and picked peas from early June until early fall, one year picking them as late as November 5. (I tried to duplicate this in Ohio, but found it was next to impossible there.) I had two enemies in my fight to produce peas continuously. Thrip was the worse, and it was a worst pest with peas in England than I have ever known it in America with gladiolus and onions. The second was a bird known as the haw-finch, a bird similar to the grosbeak of America. It would take the



whole pod in its beak and literally chew it up. The only remedy was to shoot it and that was contrary to law.

A vegetable I have never seen in America, one which was then considered a delicacy in England, is seakale. It belongs to the brassica family and is blanched similarly to witloof or chicory, sometimes called French endive. I grew both the globe and Jerusalem artichokes. The Jerusalem artichokes I have seen in America have been no larger than walnuts, but in England they produce a heavier crop than potatoes. In the garden I mentioned as being outside the garden wall, we raised the coarser vegetables, the brassica family and the root crops; potatoes, except for early varieties, were grown on the farm. The lavender hedges in this garden were a pretty sight; we harvested the lavender at the proper time and it was dried and used for sachets.

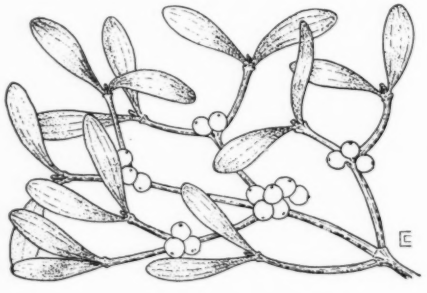
We had to wage perpetual war against wasps which were ever a bad pest in England. We protected our fruit in many ways but always endeavored to destroy all the nests possible. I remember going out at night as a boy and destroying sometimes as many as twenty nests with a torch composed of brimstone and saltpetre. Later we used potassium cyanide which was much more efficacious and can be used during the day. It will destroy every last wasp in the nest; it is, however, a deadly poison.

In mid-August an annual flower show was held in the park and the grounds were thrown open to the public. While always attractive, "Oaklands" perhaps at that time looked its best.

During the early months of the year, the spring bedding surrounded by large banks of rhododendrons, azaleas, and laburnums were very colorful. We had a very interesting collection of hollies and ivies. Hollies were a "pet" with Mr. Harvey Combe, and he had every variety of variegated holly obtainable. The English holly was scattered all over the park and around the grounds. On location on the garden wall where fruit trees would not thrive ivies were planted, and many would be surprised at how many varieties of ivy there are. Mistletoe also grew rampant in our orchards.

There were many unusual trees in the park among which were Quercus Suber, the cork oak; *Quercus Ilex*, the evergreen oak, and *Araucaria imbricata,* the Chilean pine or monkey puzzle. Another favorite of Mr. Combe was the English yew, *Taxus baccata.* This is the best of the yews for topiary work and we even had some of that at "Oaklands." There was a yew arch over a walk, trimmed flat on top and above specimens of topiary art, peacock, urns, teapots, roosters, and so forth. We used the English yew for windbreaks, hedges and screens.

A plant that used to do well in England was hypericum. There is nothing better for the edges of shrubbery borders than *Hypericum calycinum;* it remains in flower a long time and is also very neat.



Two editions of the ENCYCLOPAEDIA BRITANNICA contain commentaries on Mr. Brabazon and his ability as an artist, a watercolor painter, and a pianist. It also deals with the architecture of "Oaklands" house and its architect, and names the architect that landscaped the grounds.

Of the Combe family only the wife of Harvey Combe Jr. is living — in a home in Sedlescombe Village, once a part of a fine estate. The rest of the family have passed on, one by one, and "Oaklands" has been sold to strangers.

These reminiscences will, I hope, convey some idea of what an old English home was like—a way of life that is forever gone. I spent many happy years at "Oaklands." I deeply regret all that has happened to the land of my birth, but I am thankful to be in America. In the January-February issue of The Garden Journal, I shall relate some of my experiences in gardening in this country.

THOREAU (from page 159)

new year. Is it the winter of their discontent? Do they seem to have lain down to die, despairing of skunk-cabbagedom? . . . But not so with the skunk-cabbage. Its withered leaves fall and are transfixed by a rising bud. Winter and death are ignored; the circle of life is complete."

As I neared the closing pages of Volume 8 of the Journals, I became aware that it and its predecessor Volume 7 while mentioning many species were devoid of the descriptive passages about wild flowers which had so enriched volumes 4, 5 and 6. I also noted in that last volume an increasing number of careful and complete measurements of many animals and birds. Would this indicate that his interest in botany and natural history was becoming more and more technical? If so, I am sure this was being accomplished without the lessening of his fervent nature worship.

As I studied his latest field work of spring and summer 1856, I was amazed at the great number of species he seemed to know so well, the extent of his botanical knowledge and the proficiency of his observation as illustrated by the comparative study of the hypericums in Volume 8, pages 426 and 428. It is evident during the years from 1850 to 1856, he had become a pretty good amateur botanist, quite an accomplishment, if self-taught.

I was beginning to wonder about how many species of plants and trees he actually knew. I turned to the Journal index which takes up the final one hundred and nine pages of Volume 14. A count of the species represented totaled some seven hundred. This was quite disappointing to me, until I started to check whether all species mentioned in the text could be found in the index. I then learned that many which were mentioned but not further described were not included and as many had been omitted as had been specified. For that reason an estimate of thirteen hundred to fifteen hundred was not an improbable number. I have been advised that his six herbarium portfolios among the treasures housed in the Con-

cord Library contain some seven hundred specimens — this would tend to substantiate the higher figure as representing his achievement in this one branch of natural history.

This study of Thoreau as botanist and lover of wild flowers is almost finished. However, I should not leave my reader with the erroneous impression that his botanical studies were uppermost in his thought. The seven thousand pages of the Journals have taught me how broad and varied were his other interests in nature and mankind.

His love for the creatures of the wild — hawks, woodchucks, muskrats and all others—knew no bounds. Thoreau never willfully killed any bird, animal or reptile and refused to condone their destruction even in the interest of science. Many pages ring with his protest and indignation at the killing of hawks and the so-called sport of trapping animals for their skins, leaving their red carcasses to rot in the fields. He was particularly bitter about the destruction of muskrats. He chides legislatures that make laws to protect only those birds that feed on worms or insects, withholding protection for the others without appreciation of the beauty and esthetic value of their plumage and song.

His humanity is shown by his feeling and consideration for the poor Irish railroad workers and their children that lived in huts along the right of way. One of these, Johnny Riordan, is immortalized in Volume 2 by the poem "The little Irish boy." He is given a tribute in Volume 3 for his triumph over poverty, as ill-clad in the bitter cold weather this "forward scholar" willingly trudges through the deep snow, a full mile to school.

Being very partial to outdoor people, Thoreau loved to chat with farmers and fishermen. He would lend an ear to trappers and hunters, even though he could not sanction their occupation. These people brought him news of what was happening — the appearance of the first bluebird, the blooming of the arbutus, the flight of wild geese in spring or fall, the locale of the fringed gentian in a particular year. He often recorded their reports with his own.

Those who love wild flowers will always cherish his writings and feel they are an inspiration and encouragement to "seek the flower in its field."

MY ADVENTURES WITH ROSES

By **Helen Keister Hodge**

AFTER MANY YEARS living as a "cliff-dweller" in Washington, D. C., my husband and I finally decided that we must break away and get out where we could get our feet muddy and, incidentally, get some of the fresh air that we were unable to find in metropolitan Washington. Then came a period of house-hunting that finally ended when we found a home to our liking in Arlington, Virginia.

The first spring after we moved, I decided that we should have flowers, flowers, and more flowers. Catalogs came in the mail, and finally I was able to get my husband to dig some beds. At first we planted annuals and perennials, then came the first rose order. We had lots of roses from those first few bushes, but I felt that I had somehow failed to get friend "hubby" properly interested in the garden.

When the fall shows started, some of my friends insisted that I cut some of my roses and enter them. After much persuasion, I did cut a few and entered them in the Potomac Rose Society's Fall Show. Imagine my surprise and pleasure when I found that we had actually won several blue, red, and white ribbons! These ribbons did more to stir my husband's interest than anything I could have done or said.

From this point on, we began to go all the way. Our yard was rather small, and we could only have about thirty or forty rose bushes, so we started looking for more ground. We finally found our "dream home" in Fairfax County—in Sleepy Hollow. We moved in late October, then started setting out more roses. We now have almost three hundred bushes.

Our beds are laid out formally, with roses on one side of the yard and perennials on the other, and a good-sized lawn separating the two sides. We spend most of our leisure time—if you can call it leisure time—working in the beds, cleaning, cutting back, watering, feeding and spraying. As my hsuband leaves home for work early in the morning and gets back late in the evening, most of our work is done on Saturday and Sunday, although now he says it isn't work.

We spray each week, using a spray solution packaged for members by the Potomac Rose Society. With this spray, we have managed to keep black spot down to a minimum. During the week I usually watch for signs of the dread disease, and if I see any evidence, I pick the diseased leaves and put them in a sack. Later they are burned.

Usually Sunday is the day for soaking. We are blessed with a well in addition to city water, and we use both sources. We use three hoses to soak, two from the city water supply and one from the well, and within a few hours the beds are thoroughly watered.

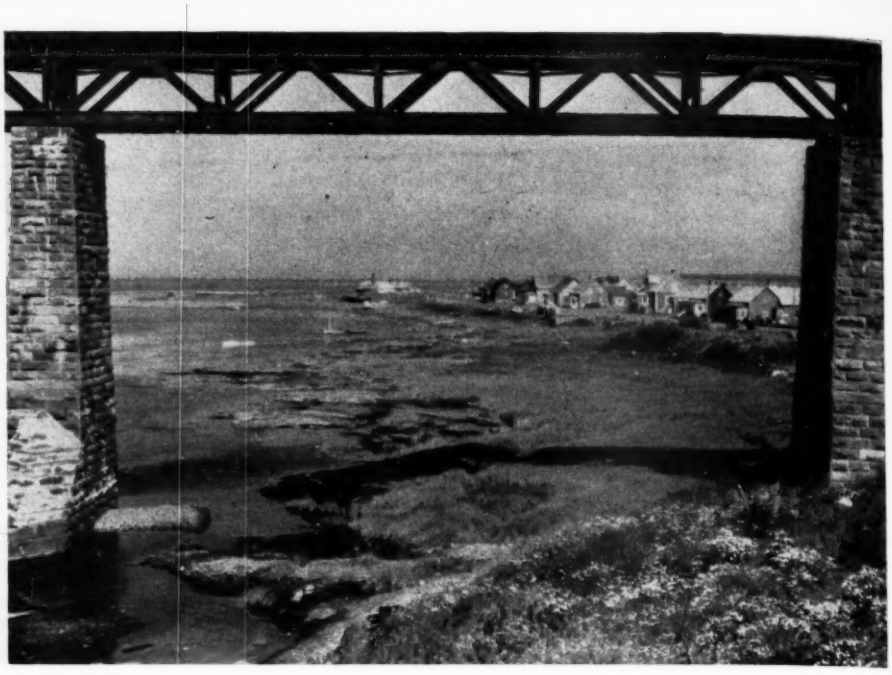
We have mulched with, in order, buckwheat hulls, peat moss, ground corn cobs, sawdust, and now we are going back to peat moss, feeling that it is the best. We have used cow manure by the truck load, and we have tried activated sludge. Now we are experimenting with dehydrated cow manure and feel that it gives good results.

During the summer months, we enjoy giving our roses to our friends and usually have several vases full in the house. However, along about the middle of August we begin cutting back in preparation for the many rose shows that start with the coming of fall. Although we have won many honors at the various neighborhood shows, we still get a wonderful thrill when we walk in the show after its opening and see a blue ribbon at the foot of one of our entries.

Several years ago we had some spot lights installed where they would light the garden. This summer we have had many visitors to see our roses — some come in as late as ten o'clock at night. We are always happy to have visitors and enjoy them all. These visits usually end up with coffee and cake. While we did not keep a count of the visitors to our garden this summer, we believe they numbered hundreds. One garden

(Continued on page 214)

Trois Pistoles.



A GASPÉSIAN HOLIDAY

By Howard W. Swift

THE COURSE lay north from Maine's deeply incised coastline, continued up the Penobscot River beyond Bangor where falls make salmon leap to reach their spawning-ground. It swerved west slightly but still north. Through Presque Isle, Caribou, Van Buren, Madawaska, Edmundston and St. Jaques, rain splashed hard against the car windows. The click-clack of the windshield wiper provided a kind of dirge and tires made a monotonous sizzling as they rolled over wet pavement. Although the map color changed as we entered the Province of Québec, the weather improved not one whit. St. Rose-du-Dégelé had rough, muddy streets and was most forlorn. The road beyond Notre-Dame-du-Lac was a good change from potato country as it wound along Lake Témisquata, but it still rained and our morale demanded release from the closed-up car. A wet meandering in the bush at Cabano and the vasculum was opened on rusty hinges to receive its first wet weeds. No ordinary vasculum, this, but one with historic value. It was the collecting case once used by Nathaniel Lord Britton, first Director of The New York Botanical Garden. It ordinarily hangs on the wall of my office and frequently serves to introduce some querying guest to one method of keeping plants from drying until they can be flattened out in a plant press. This stop only yielded a fine specimen of *Sanguisorba canadensis*, the Canadian burnet, which we needn't have gone farther than the Garden's perennial border to find. There were clubmosses and bunchberry (*Cornus canadensis*), the fruit of which I used to eat as a child, even though there was more to disgorge from its tempting clusters than to swallow. These were our first Gaspésian plants.

Somewhere beyond St. Louis-de-Ha! Ha! and St. Honoré, the clouds lifted like a great curtain and there was another reconnoiter along both sides of the highway. That delightful evergreen, *Kalmia angustifolia*, sometimes referred to as lamb-kill; *Anaphalis margaritacea*, the pearly everlasting which is so good in dried bouquets; tall fireweed (*Epilobium angustifolium*), which takes over promptly after forest fires; and a few interesting grasses were added to our booty. A few miles farther along we became suddenly aware of great peat bogs from which blocks of peat had been cut and stacked high between strips carpeted with cranberry, fireweed and lambkill — plants that here were not even a dime a dozen as they extended for acres. Eventually a weary entrance into Rivière-du-Loup and a first glimpse of the mighty St. Lawrence, narrow enough here to be a short ferry trip across. Rivière-du-Loup? How interesting to know that Champlain gave the town this name for a tribe of Indians whose totem was a wolf!

As only Bar Harbor, Eastport and such places are "down east" to New Englanders who live in Maine, so the north shore of the Gaspé is only "north shore" to Gaspésians — but the term seemed more and more apt as we progressed down the river toward the Gulf of St. Lawrence. It appeared truly like the edge of our north country, and particularly when torrential rains or mist cut the water and all beyond from view.

Next morning the fresh, sparkling beauty of the Gaspé emerged from dense grey fog as a moth freshly released from its chrysalis. The forests were predominantly pine and fir and spruce; the meadows full of flowers

Bic's unique mountains.

A pastoral view near Cap Chat.

such as sweet clover, vetch, white and orange daisies, Queen Anne's lace, evening primrose, yarrow, goldenrod and hawkweed; the water of the St. Lawrence pinched into little whitecaps by a stiff west wind. The small houses were often at odd angles to the road—squared with the long strips of land that ran from the water up steep and gentle slopes into dark forests. Frequently a bright-colored house was conspicuous among those that were unpainted — fairy-tale houses, yellow or pink, pea-green or brightest blue, and sometimes with sharply contrasting roof color. Zigzagging like grandmother's cross-stitch, sturdy home-made rail fences separated each man's land from his neighbor's. Tourist farmers accustomed to spacious acreage must find these narrow strips of land phenomenal and practical only as pastoral props for artists.

Early one day, a steep embankment and a sunny hillside yielded three potentillas: *Potentilla norvegica, P. tridentata* and *P. anserina*. Here, too, was the harebell, *Campanula rotundifolia*, so-named because of its two or three roundish basal leaves. Farther along, this fragile-looking plant would be found growing in thin soil-filled crevices of rocks smothered in reindeer-moss, in high fields along with buttercups and daisies, and in locations where its toe-hold appeared most inadequate. In exposed places the wind madly lashed its wirey stems hung with dark blue bells. And here was the lovely white camass *(Zigadenus glaucus)* scattered in little clusters through tall, thin grass. Wandering through the museum in St. John, New Brunswick, days later and seeing fascinating Indian embroidery of colored porcupine quills recalled the town of Cacouna, meaning "home of the porcupine" where our first camassias were seen.

Trois Pistoles, and I wonder if other explorers half expect to see suddenly a ruddy buccaneer lunge over the crest of a hill with bandage over one eye—two pistols in his holster and one aimed straight—as I did! But no. Here was only a picturesque village of fishermen close to the water's edge, and a high trestle making an effective frame. Musk mallows *(Malva moschata)*, both white and pink, flowered on a steep bank among patches of vetch, and standing stiffly upright, brown and sere, was the stalk of the northern green orchis, *Habenaria hyperborea.*

On then to Bic, and just beyond the center of town a dirt road led past a unique cemetery, down a steep incline by a very active waterfall, then wound out around a broad cove through pointed conifers and dusty late summer flowers. The road twisted past grey ledges supporting an ornate assortment of lichens, prostrate junipers with blue-green berries, mountain cranberry hung with fast-ripening fruit, and crisp groups of polypody fern. From this vantage-point the peculiar humped mountains of Bic demanded most of our attention, as they were so like petrified crests of giant waves. An old Gaspé yarn says that the angel delegated to placing mountains when the earth was made, here became weary and spilled all that were left in her robe. By the beach was the silvery cinquefoil *(Potentilla argentea)* and the sea lungwort

The Cap Chat monster.

Clearing in the forest—Gaspésian Park.

(Mertensia maritima), flowering blue. The tiny eyebright *(Euphrasia purpurea)* was first noticed at Bic, also, and later encountered in many places. On a stony bank close to the beach was a patch of wild northeastern columbine *(Aquilegia canadensis)* with foliage which had turned to rich purples and reds, resembling shattered fragments of stained glass. One late red and yellow flower bloomed alone and was like a spurt of flame against this rich display.

Beyond Rimouski near Pointe-au-Père was found the bladder campion *(Silene Cucubalus)*, the stickseed *(Lappula echinata)*, and pin-clover *(Erodium cicutarium)* with fruits sticking up from its rosettes of leaves like tiny bayonets, a variety of the beach-pea *(Lathyrus japonicus pellitus)*, *Erucastrum gallicum* and a miniature fern, probably *Woodsia oregana*.

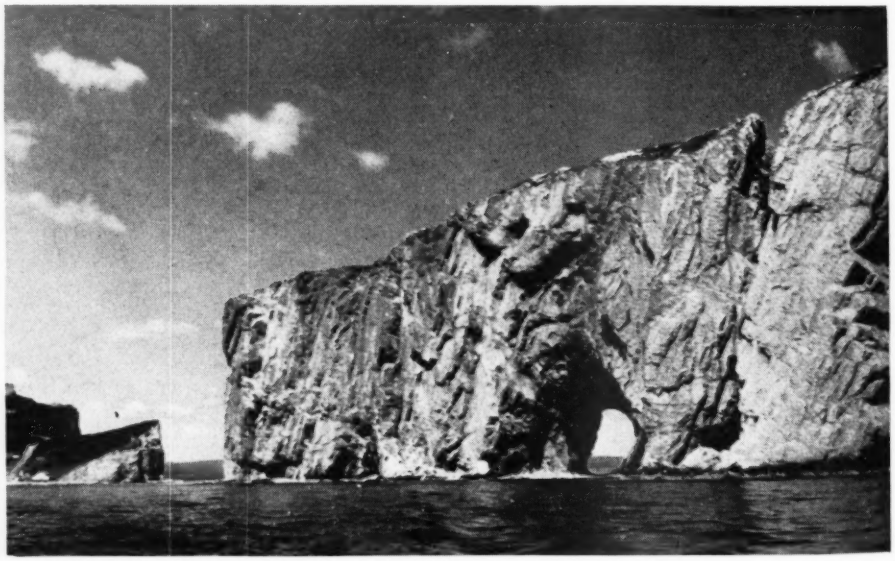
Continuing, we passed Ste. Flavie and by the road which crosses the Gaspé Peninsula to Matapédia, on through the resort town Métis-sur-Mer, complete with large hotels and comfortable inns. At this point the St. Lawrence is forty miles across and even on a bright day, land on the other side is but a broad, grey-blue band.

The next stop was by the water near Baie-des-Sables to examine those amazing rock formations of the Gaspé that so dramatically tell their story of terrific upheaval. If one had no previous desire for a knowledge of geology, rocks such as these would certainly whet it. To imagine what must have happened along this north shore is frightening.

The passing parade along our highway was very interesting — not quite as colorful as provided by the pilgrims in Chaucer's CANTERBURY TALES perhaps, but keenly enjoyed. At one place we met an old, much wrinkled grandmother tearing to town on a battered tractor, at another, two men with visored caps and goggles on strange, antiquated motorcycles—bent forward into the west wind as they drove thirty miles an hour like jockeys making for the finish line. Frequently there were two-wheeled carts pulled by plump horses taking pa and a son or two down the road on some errand, or long, narrow hay racks with low sides carrying the harvest in for winter fodder.

A necessary garage stop at Matane provided an opportunity to explore the beach and pick up some sea-weeds as well as to take pictures of floating pulpwood by a large mill — indicating a great industry of the Gaspé other than always-evident fishing. The pattern of climbing high hills and dropping abruptly to discover another little town with an imposing single church built around a sheltered cove continued, with a million-dollar view ahead at every turn.

We anticipated Ste. Anne-des-Monts now, but the long, sunny day from Matane until we arrived there was made most interesting by two detours. One was to the Cap Chat lighthouse, where we found a huge gargoylean monster made up of conglomerate masses of various kinds of rock and plastered with golden lichens. Perhaps others try to make this strange monument resemble some weird kind of cat as I did, but the name of this place really became debased from Cap de Chaste—a name which honored Eymard de Chaste, knight of Malta and Governor of Dieppe. The other detour was up a gravel road to a high hill where we parked in a gravel-pit and cooked lunch, then perused a steep meadow where bunch-berries covered great sunny patches with red and green and where there were plenty of



The Rock, Percé.

wild strawberries for dessert. Fireweed was here, as nearly everywhere, and occasionally a fragrant orchid, *Spiranthes Romanzoffiana.* On a deeply-rutted road which led down to a swift river were two close relatives, one-flowered pyrola *(Moneses uniflora)* and a variety of the one-sided pyrola which is in another genus, *Pyrola secunda obtusata; Veronica americana*, sometimes called brooklime; enchanter's nightshade *(Circaea alpina)*; corn spurrey *(Spergula arvensis)* and *Mentha arvensis* also grew by the turbulent stream.

From Ste. Anne-des-Monts our route left the St. Lawrence and turned south some thirty miles into Gaspésian Park. This took us through hills of mostly balsam fir and black and white spruce to a pleasant spot near the base of Mt. Albert (3669 feet), a mountain in the Shickshock Range which is a continuation of the Appalachians. One of the disappointments of the entire trip was that in this park, which is twenty-five hundred square miles in extent, there was almost total lack of easily accessible trails into the wilderness. Use of passes obtained from Ottawa, granting the privilege of "circulating and collecting" here, was greatly limited without a guide. To have climbed to some of the summits would have been a wonderful experience, but the Park is young and improving roads comes first. There was reward for some exploring, however, and the primeval forest—in some places two to three feet deep with sphagnum which covered debris and large fallen tree trunks—will long be remembered as would a trip to some very strange, unfamiliar world. A considerable number of plants was found before sitting down to an excellent dinner served at the spacious chalet and later, relaxing with a pipe by a roaring fire in a cozy log cabin. These plants included several ferns: *Phegopteris polypodioides, Cheilanthes siliquosa, Woodsia ilvensis* and *Polypodium virginianum.* The wood-shamrock *(Oxalis montana)* seemed lost in the dark shade of close-growing evergreens towering high overhead, and the mountain cranberry *(Vaccinium Vitis Idaea-minus)* clung tightly to a rough grey rock above a deep gorge. The twin-flower, *Linnaea borealis*, grew here with its roots deep in sphagnum. Seeing it recalled Linnaeus' herbarium specimen of the plant once seen at the Linnaean Society rooms in London. Miterwort *(Mitella nuda)* and the small-flowered *Epilobium palustre* were also among the plants of Gaspésian Park, and another find was *Cornus suecica* which I at first took to be a poor specimen of *Cornus canadensis.* Closer examination showed that the leaves were in three to six pairs instead of a whorl and that the flower bracts were unfamiliar.

Reluctantly we left the brooding beauty of this extensive park and returned to Ste. Anne-des-Monts—mercy, with a hole in the gas tank plugged with a match stick—and through a section under construction where I held my breath. At this point the term *essence* for fuel was most appropriate!

Hedge display in the government nursery near Paspébiae.

Beyond Ste-Anne-des-Monts, the road is built only fifty or sixty feet above the pounding sea, tight against the foot of sharp precipices which in one place rise eight hundred feet straight up from the road, such cliffs facing hills to twenty-three hundred feet. Rock formations along the water's edge as well as on the cliffsides urged frequent stops, and in looking for plants nearby we found that many plants easily discerned now were familiar. Only occasionally was there a plant to be pressed. It was at a stop in the shadow of sheer rock that *Arabis divaricarpa, Parnassia parviflora* and *Saxifraga caespitosa* were found growing in loose, damp rock with the hay-scented fern, *Dennstaedtia punctilobata* and the common groundsel, *Senecio vulgaris.* At last that seaside plantain (*Que de rat* to inhabitants of Québec, *Plantago juncoides decipiens* to botanists), was collected.

From Anse Pleureuse or Weeping Cove, fittingly enough, there was deep rumbling and frequent showers blurred the landscape. It was with pleasure, then, that we found refuge for the night at Grand-Etang (Big Pond) with its beautiful bay sheltered by wooded headlands. At one end of the bay there is a small salt pond, and beyond, snuggled in rolling wooded slopes, a long, fresh-water pond. Where the two ponds all but join there is a cascade and a covered bridge. Arrival at Grand-Etang was late on a Saturday afternoon. As it afforded a cabin close by a small inn with good food, we remained two nights and attempted to dry out pressed plants by the side of a tiny wood stove that took only three short sticks at a time and made the one room hot as Hades.

Rain, too, as we drove from Grande-Grève to St. Marjorique and crossed over a long bridge, enjoying hurriedly the beautiful greens of salt-marshes and along the bank of the Gaspé Basin to the mill town of Gaspé. It had little to offer except a beautiful new post office with a fine portrait of Queen Elizabeth over the door. The town's history, however, would furnish adventure stories for volumes.

Near Douglastown a marsh-land extended inland from the sea and looked

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Kingwood Hall houses the library, meeting rooms, and administrative offices of the Center. Built in 1926, it was the former home of the late Charles Kelley King.

Kingwood Center of Mansfield, Ohio

By **Carlton B. Lees**

UNIQUE IN THE botanic garden-arboretum-garden center family is Kingwood Center, Mansfield, Ohio. A newcomer to the group, Kingwood's emphasis is placed on displaying and disseminating information about garden plants to the average home owner. Because most home owners are usually not students of plants, the Center's program is quite different from that of the more scientific approach of the botanic garden and arboretum.

Since Kingwood Center's opening in October 1953, nearly a million visitors have viewed the wide selection of plants in the gardens, along the nature trail, and in various displays and shows, some of which have been national in scope. They have also attended lectures, demonstrations, and classes and have made use of Kingwood's free circulating library of books pertaining to horticulture, gardening, landscaping, nature study, botany and related subjects. Outside of the realm of gardening-nature study activities, visitors have attended outdoor concerts, children's theatre and theatre-in-the-round productions, art exhibits and classes and innumerable other activities. All this was made possible by the forethought of the late Charles Kelley King, who gave Kingwood "to the people of Mansfield and the surrounding Ohio communities." His home, Kingwood Hall, now serves as the hub of the Center's activities; it houses meeting and lecture rooms, the library and administrative offices.

Besides Kingwood Hall, the Center includes forty-seven acres of land, a gatehouse, exhibit hall, workshop, greenhouse and service buildings. To make certain that Kingwood would be maintained and its program developed as he desired, Mr. King also left a large trust fund which adequately provides not only for the Center's present needs, but for the expansion of its program and physical facilities. The Center's facilities are available and activities are open free of charge to the public. A monthly publication, KINGWOOD CENTER NOTES, is sent without charge each month to about seven thousand Ohioans who are interested in the Center and in current garden information.

A tour through Kingwood is interesting at almost any time of the year. Early spring brings snowdrops, scillas, and thousands of purple and golden crocuses into bloom along with many other, so-called, small bulbs. Nearly five hundred varieties of daffodils, all labeled and classified, turn the borders of the woodland into solid masses of gold, cream, and white in late April. Outside the exhibit hall are special beds which contain the newest in narcissus from breeders in England, Ireland, Holland, and America. Planted in the fall of 1956, most of the varieties were in bloom for the National Daffodil

In Kingwood Center library. The original furnishings and other appointments of Kingwood Hall have been retained as near as possible.

The small terrace gardens seem to have been carved from the woodland.

Society meeting and show which were held at Kingwood in April, 1957.

For the largest number of visitors, the greatest show of the year comes at tulip time. Over fifty thousand tulips are planted each fall in especially designed free-form beds cut into the spacious lawn south of Kingwood Hall. Large, old beech trees, sugar maples, and a pair of brown-leaved Schwedler maples help make an especially attractive setting for the tulips. Much emphasis is placed on the use of various types and colors for special effect; as an example, two varieties are sometimes interplanted to give "textured color;" lavender-pinks are used to pick up the color of the redbud which is in bloom at tulip-time; pink and orange tulips are planted near pink and orange Ghent hybrid azaleas. The formal gardens lend themselves to large masses of a single color, near colors, or to bright contrasts. Each year a connoisseur's collection of newer varieties is included in the plantings. A weekend in tulip-time draws more than twenty-five thousand visitors to Kingwood from all over Ohio and, each year in increasing numbers, from all over the United States.

Coming close on the passing of the tulips, the iris garden begins to display its delicate, sparkling color. While the garden is only three years old, a purple filbert hedge is beginning to provide a dark background which makes the most of iris color. The Central Ohio Iris Society, newly formed since the opening of Kingwood, cooperates closely with the Center and has established a sizable planting of guest irises — all new and outstanding introductions. A prerequisite for an iris to be included in this collection is that it must be named, registered, and available in the trade. This is a general policy with all Kingwood plantings. Its purpose is to save the visitor the frustration of seeing and trying to get a plant which is not yet available. And while attention is paid to the newer varieties, older, very inexpensive ones are always included if they are still of merit, as, indeed, are several older varieties of iris, gladiolus, chrysanthemums, and many other garden plants.

Lilies and peonies make up the June displays at Kingwood. The latter made their first really good showing this year, but the lilies, which were planted in the fall of 1955 to coincide with the 1956 National Lily Society show and meeting which were held at Kingwood, have grown so vigorously that they have been divided and replanted in many places at the Center.

As summer progresses, the gladiolus and annuals begin to pick up the color legacy left them by the masses of bloom in spring and early summer. The Ohio Gladiolus Society sponsors an annual show at Kingwood the last weekend in July. This show attracts exhibitors from Michigan, Kentucky, Indiana, Pennsylvania, and other nearby states as well as from all over Ohio.

The free-form beds in the south lawn and the formal gardens which were filled with tulips in May, by midsummer again become brilliant with a wide variety of annuals. Petunias, zinnias, celosias, marigolds, the heat-resistant calendulas, and other annuals of new

Tulip-time brings as many as twenty-five thousand visitors to Kingwood on a weekend.

Movable flats (four by eight-foot panels of plywood and pegboard) allow each show to be different from the preceding. At the North American Lily Show where orange, yellow, and white were predominating flower colors, the background colors were rich brown, spruce-blue, and white.

or comparatively recent introduction are included in the plantings. As with the tulips, attention is given to the combinations not only of colors but, in this case, of kinds. While Kingwood may display the plants, all accurately and neatly labeled, every effort is made to help visitors pick up ideas on how to use the plants. This is done through lectures, slides, KINGWOOD CENTER NOTES, and displays outdoors. Seasonal flowers from Kingwood's gardens are used in flower arrangements throughout Kingwood Hall to emphasize their indoor use. Beside each arrangement is a small white card with the names of the materials used in the arrangement; it is a constant pleasure to hear visitors' comments which run to the "I didn't know (some common plant) could be so beautiful!" vein of exclamation.

With the coming of cool weather, explosions of color begin to appear in the dahlia garden. Salamanders (heating devices using fuel oil) are used in the garden to bring the dahlias through the earliest frosts. If successful, they usually bloom into late October (before the frosts finally kill them in spite of attempts to ward them off). From such intense brilliance of dahlias, it is almost something of a relief to go to the more subtle, yet rich color of the chrysanthemum plantings. A special chrysanthemum weekend in late October attracts nearly as many visitors to Kingwood as a Sunday when the tulips are in bloom.

About three major flower shows are staged at Kingwood each year, and while the gladiolus show has become a more or less annual affair, the other shows vary from year to year. Dahlias, iris, chrysanthemums, and roses have been the subjects of special shows in addition to the ones already mentioned. In all of Kingwood's flower shows, special emphasis is placed on staging, and every effort is made to prevent the cliches of the flower show world. Background color, lighting, attractive and appealing informational displays, and the composition of the actual space of the show are given study. Where possible, the display techniques which have been developed in recent years by museums are applied to the Kingwood flower shows.

With the coming of winter, Kingwood does not retreat into the dim background. If anything, its activities become increased. The many clubs and organizations which use Kingwood's facilities create a bustle of activity, and there is a constant demand for lectures by and information from staff members. November usually brings a major Christmas decorations demonstration to the Center for the benefit of those registering for Kingwood's "Christmas Decorations Workshop," in which about six hundred people make their decorations each December. The Center provides work space, instruction, design ideas, and for the convenience of the participants, various greens and decorative materials are on hand which may be purchased. The exhibit hall, in which the "Christmas Workshop" is held, is also the scene of a major art show which usually opens the Sunday

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A children's art class is sponsored by the Mansfield Fine Arts Guild.

A Country Housewife's Garden

By Gertrude B. Foster

"A lesson in each flower
A story in each tree and bower
In every herb on which we tread
Are written words, which rightly read
Will lead us from earth's fragrant sod
to hope, and holiness to God."
Flowers and Festivals

A COUNTRY HOUSEWIFE, or even a suburban one, may find herself taking a school class for a morning while the teacher attends a reading demonstration. The day I left my garden to take the combined seventh and eighth grade of our little elementary school, the teacher attended an in-service training class conducted by an outside expert in another part of the school. She gave me an opportunity to bring material which I should like to show to the group—here was a chance for me to teach. The fact that I had been away from formal education for more than a decade frightened me at first. Then I thought of all I had learned while spending those years in a garden and close to the soil. Here was something I could offer these modern children.

They were studying American Indians. TIME MAGAZINE had just come out with an account of a Seminole Indian who had been discovered by the Upjohn Company (would that name set off a round of giggles?) as the sole possessor of an ancient medicine man's formula for making an herb tea which acted as a tranquilizer. The drug company flew the seventy-four year old Indian to its research department in Kalamazoo, Michigan, where he instructed research chemists in making the brew composed of at least twelve herbs. It had taken him seven years to learn to prepare the complex mixture properly. The Upjohn Company hoped to find the active ingredients in the tea, which seemed to have immediate effect upon a laboratory mouse, in less than two years. This story from "current events" tied in with the subject of the children's "social studies" and my interest in herbs.

In preparing an exhibit of Indian uses of herbs for this class, I was fortunate to have for reference Melvin R. Gilmore's "Uses of Plants of the Indians of the Missouri River Region" from the thirty-third annual report of the Bureau of American Ethnology. Using a doll for a model, my daughter (one of the seventh graders) and I preprepared diapers of cat-tail fuzz. It was the perfect diaper service to appeal to modern children as the ultimate in neat packaging. The downy seed parachutes contained in one spike made enough padding for one change for a baby. This fluff was believed by Indian squaws to be effective in preventing chafing of the baby's tender skin. They also used it as a dressing for burns and scalds and as a filling for pillows and insulation on cradle boards.

This was a co-ed group, so I did not reveal how the women of the tribe collected a great quantity of the down of *Typha latifolia* upon which to lay the newborn infant. Nor did I add Mr. Gilmore's further remarks that the mother removed the down, which adhered to the baby's body by moistening it with milk from her breasts and rubbing it off. Unfortunately, most of our cat-tails grow in such a wet place that I did not gather enough of the leaves to give the children a chance to try their hand at weaving matting from them, as Indian children would have done.

I did take along a few ears of Indian corn, which Rosemary had grown for Christmas presents. We used a very old cast iron mortar and pestle to grind the kernels, while talking about how much work it would have been to prepare breakfast in a tepee. We had hoped for a bigger crop of corn this year, because my daughter had happened on an excellent bread by playing around with hand-ground corn and bread dough that I was mixing one day. By using the whole ground corn meal with regular flour, she produced a loaf of crunchy and nut-like texture which was especially delicious when toasted. It was so different from any bread on the market that she decided to bake some loaves this Christmas as gifts for friends and fond aunts.

Had there not been twenty-seven children in the class, it would have been fun to bring some of the corn meal bread for them to spread with jelly made from the high-bush cranberry, *Viburnum trilobum*. I did take along the beautiful red berries which resemble cranberries in flavor, but which contain a surprisingly large seed. It was an excellent season for the fruiting of this handsome shrub, which I brought into the garden from the edge of a wild woods. The white blossoms are as showy as any cultivated bush in June, and the fruit remains a brilliant adornment far into the fall. The fruit does not contain enough pectin in itself to

produce a firm jelly, so the juice of crab-apples or flowering quince fruit, simmered in water and strained, is added to give a good gel.

I couldn't resist taking a leaf of the hardy prickly-pear cactus from the garden. The children were interested in the so-called "cactus game" of the Dakota Nation. One boy, who was a swift runner, was chosen to be "it," and he would impale a cactus on a stick. The stick served as a handle by which he held up the plant for the other boys to shoot at with their bows and arrows. When a boy hit the target, the target holder ran after him and struck him with the spiny cactus; then he would return to the goal and receive the shots of other boys. It would seem that the penalty for being a good shot was too great in this "game." Unfortunately, my cactus did not bloom this summer so I had no fruit to show the children.

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Plants, Old and New, For New Home Landscaping

By **J. Franklin Styer**

ADVENTURE awaits the owners of ranch-type houses in the East, because the art of landscaping these beautiful new homes is still in the making. The people who live in them are pioneering in a new field of design. As their growing families spill over the back and front yards, they are devising ways to use their lots to the greatest advantage. And at the same time beauty is not forgotten.

The majority of these homes are being planted by their owners without the aid of landscape architects. When a typical or distinctive style is finally developed, we may safely say that it will be a popular style, even as to its origin. That it will vary in detail from South to North is likely, and it is sure to be different from the well-known California style.

Major elements of the coming style may already be distinguished, and these relate to both land use and plant selection. The ranch-type house appears to lead to more elaborate and careful use of patios, terraces, play-yards, and other enclosures which may all properly be called gardens. These matters lead to selection of plants for separation and enclosure purposes and a corresponding interest in plant form rather than flowers.

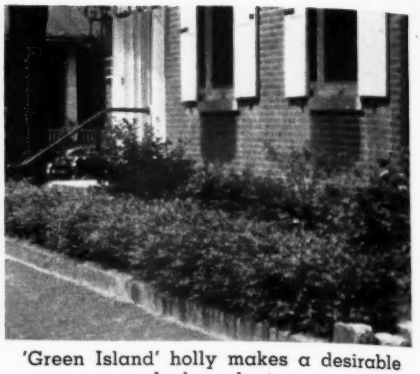
We shall discuss a few of the elements of the new style and the plants, old and new, which serve them best.

The ranch home doesn't need an old-fashioned foundation planting. In fact, the term "foundation" is dropping out of landscape literature. Aside from a graceful outlining of the front door and a softening of the house corners, such a planting is not required. There is, however, a new idea which we may call ground covering in front of the house. In its simplest form, this replaces grass, which may not always blend well with the house, with other low-growing plants.

An extreme development of this idea is noticed in the middle South, where some homes may be found banked in ten to twenty-foot belts of azaleas. The effect is spectacular. Large areas of groundcover plants, such as pachysandra and English ivy, are effective in more subdued fashion. But the list of plants used in this manner includes all the dwarf and spreading varieties, with emphasis upon the broadleaf evergreens.

This idea came out of the earlier idea of rectangular masses used in the foundation planting of ranch and split-level houses. The rectangles developed into short hedges and then became lower and lower as smaller plants were used in their construction.

The spreading plants used in this manner are numerous. The white-veined Baltic ivy is popular. Dwarf English yew, *Taxus baccata repandens; Pinus Mugo; Abelia grandiflora* (with liberal use of shears); *Cotoneaster horizontalis* and *C. apiculata; Ilex crenata* 'Green Island,' 'Helleri,' and 'Kingsville;' *Jasminum nudiflorum* and *Rosa Wichuraiana* are recommended. For slightly deeper masses, using taller growing plants, the great number of varieties includes Sargent hemlock; *Berberis Julianae nana; Ilex crenata convexa, rotundifolia,* 'Hetz;' *Ligustrum lucidum* in four or five varieties; *Pieris japonica; Prunus Laurocerasus* 'Schipka' or 'Zabeli;' pyracanthas; *Deutzia gracilis;* and the huckleberries.



'Green Island' holly makes a desirable hedge plant.

The low-growing junipers are losing popularity. At the top of many lists are the lower yews like *Taxus media, densa, densiformis, cuspidata nana,* 'Hatfield Spreader.' And many plantings use masses of leucothoë and mountain-laurel where exposure permits.

The second idea is the use of small trees to retain proportion with the low roof-lines. In one sense it fits with the previous idea of wide masses and matches plantings to the house. In another sense it subtly creates an illusion of greater outdoor spaces. In a twenty-acre estate a great elm may stand at the end of a thousand foot-vista; the new home gets somewhat the same effect with a *Magnolia stellata* at twenty paces.

The small trees meeting now with increasing demand include the sourwood, the double white dogwood, *Viburnum prunifolium, Cornus alternifolia,* hybrid rhododendrons used as trees, albizzia, and, above all, the American holly. All the native small trees are becoming popular, the flowering crabs more than they deserve to be.

This terrace created to increase living space is shaded by a Japanese cherry.

This idea is being advanced by our power companies for selfish reasons, and it is well to keep the real arguments for it uppermost in our minds. Wires are ugly and, in many cases, it is necessary to cover them with tree branches.

Idea number three is air-conditioning techniques. Until a few years ago the use of shade trees and hedges and masses of plants was considered for picture making purposes alone. Now it is recognized that any home saves heat in winter and may be kept cooler in summer, inside and out, by correct planting. The hedges are placed to break cold winds from north or northwest, and allowed to grow to good height. The air from the south and southwest is funneled in and allowed to move through grounds and house.

Trees are placed to shade the roof and porches and patios in summer, and yet to allow the sun in in winter. Trees were formerly used to enframe the house, but for this new technique they often are set squarely in front. Many houses are turned away from the street in such circumstances.

The writer wishes to be clear on one point. Where small trees belong in the design, well and good, but let no utility salesman or small-tree cult prevent us from using our fine tall trees. For the technique just described, when a tree must shade the house in summer and get out of the way of the sun in winter, height is absolutely essential. Sugar maples, elms, red oaks, pin oaks, ash, and similar trees can not be dispensed with. The much accused silver maple can serve us better than we know. It is really ridiculous to damn the tall trees for ranch homes, when any number of them are built in woodlands and look perfectly at home there.

Idea number four is the making of pictures for picture windows. This is where the ingenuity and artistic sense of the new home owner runs riot. Thousands of ways to do this job have been devised, and just as many more will be found. It is quite impossible to see any single style emerging as particularly popular. It is, however, evident that the picture window is very frequently connected with a terrace or patio. And the better flowering shrubs are being used, to some extent, for more color and seasonal change, which is not always possible with purely evergreen material. Among these are the viburnums, the new forsythias, the smaller lilacs like 'Etna' and 'Mme. Lemoine,' and *Euonymus alatus compacta.*

Picture windows or rather large windows figure again in our fifth idea. The large window projects the room out-of-doors, and the outdoor space into the room. We need to coin a new term, "out-of-windows." The terrace or garden is treated as a part of the room, and its design is considered along with the room furnishing. Color schemes from early spring to late fall are made to match and harmonize inside and out. The ground covering of the terrace is selected to blend with the floor treatment within the house. Picture window

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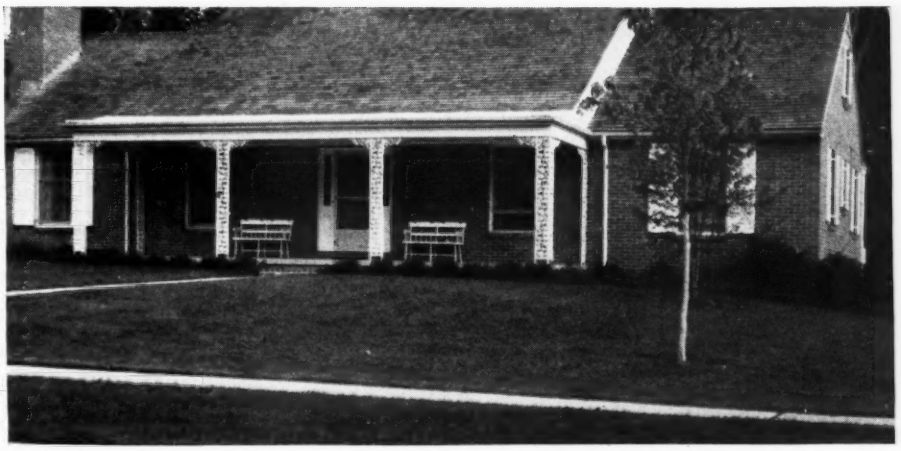
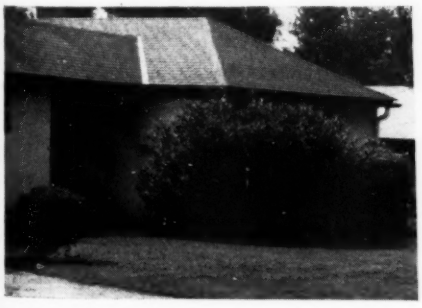
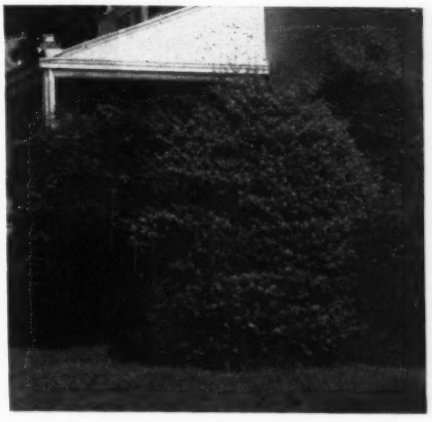


The simplicity in planting is in keeping with the style of the house.

Albizzia julibrissin rosea can be effectively used as a specimen on a moderate-sized lawn.





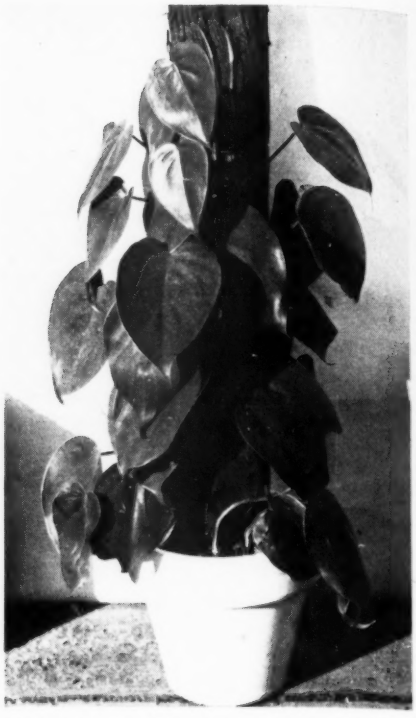
Left. *Prunus Laurocerasus schipkaensis* is too large for this dwelling.

Right. *Ilex crenata microphylla* furnishes interest in plant form.

1. *Pittosporum Tobira*

A Variety of House Plants

By T. H. Everett



2. *Philodendron oxycardium*

THE HOBBY OF GROWING PLANTS in houses shows a distinct modern trend towards emphasis on variety. Never since Victorians collected tropical and subtropical plants for cultivating in their conservatories has such enthusiasm for diversity in potted plants been apparent. American homes vary so much in the environmental conditions they afford plants that it is almost silly to classify the kinds we grow as suitable for east windows, west windows, south windows and so on. The fact is, conditions of temperature, humidity, light, exposure to moving currents of air, etc., differ greatly in individual east windows, west windows and south windows. Some plants tolerate widely variable environments; others succeed only when conditions of soil, moisture, atmospheric humidity, light and temperature approximate rather closely their optimum requirements.

Usually, the grower of house plants who wishes to extend his or her collection must be prepared for a certain amount of trial and error experiment; it is unlikely that every plant tried will prove successful. Here are a selection of house plants, some tolerant, some more exacting in their requirements.

Saintpaulia (or African violets) are perhaps the most popular of all flowering house plants. The African Violet Society of America is devoted to hobbyists interested in them. Vast numbers of named varieties of saintpaulias are grown. They differ in foliage, size and color of flowers, doubleness or singleness of blooms and other features of horticultural importance. African violets thrive in subdued light and may even be grown successfully without daylight at all, under fluorescent lamps. They prefer a soil that contains an

3. Left—*Pteris longifolia*

4. Below—*Adiantum cuneatum*

5. Upper Left—*Begonia coccinea* var.

6. Upper Right—*Jacobinia carnea*

7. Right—*Passiflora alato-caerulea*

abundance of organic matter and prosper in temperatures of 60-70 degrees. They are among the most easily propagated of plants; single-leaf cuttings root without trouble.

Aloes, like other succulents, are particularly adapted for growing in arid atmospheres. Although they stand full sun, they grow surprisingly well in good light without direct sun. They need a porous soil which should be allowed to become nearly dry before water is applied, then it should be saturated.

Nephrolepis exaltata and its varieties, of which one of the most popular is *bostoniensis*, the Boston fern, are plants for partial shade and fairly humid atmospheres. They prefer moderately moist, porous soil, replete with humus.

Fancy-leaved caladiums are popular summer foliage plants. They are easily grown from tubers and thrive in bright light with a little shade from strong direct sun. When in active growth they need an abundance of water and regular applications of fertilizer. They should be kept dry in winter.

Chlorophytum elatum vittatum is well adapted for growing in cool rooms in sun or light shade. Sometimes called spider plant because of the appearance of the young plantlets that develop freely on the flowering stems, this kind grows freely without special care.

Senecio mikanioides, the German ivy,

8. *Saintpaulia*

vided. They need 60-70 degree temperatures and moist, free-draining soil. Shade from strong sun is essential. Their red, pink or white flowers last well.

Begonia semperflorens, the wax begonia, is one of the easiest of plants to grow and in most locations blooms more or less throughout the year. Any reasonably good soil suits it. It withstands part shade but flowers best in full sun. Many varieties of this species

9. Boston fern in a planter

is an easy-to-grow vine that thrives in cool rooms where light is good and shade from bright sun is provided. It grows readily from cuttings.

Spathiphyllum floribundum, like other spathiphyllums, is best suited for locations where the atmosphere is not excessively dry and where light is good but shade from strong, direct sun is received. A rich, organic soil kept always medium moist suits spathiphyllums.

Clivia miniata is a fine plant for a cool sunroom. It bears clusters of bright orange flowers in late winter and spring and is usually at its best as a well-established specimen in a fairly large container. In winter the soil should be kept rather dry. More abundant watering is in order in summer.

Anthuriums are not plants to attempt unless a humid atmosphere can be pro-

10. Aloe

are grown with white, pink or red flowers and green or copper-red foliage. Some have double blooms.

Peperomia hederifolia is one of several species and varieties of this genus that are popular foliage plants. This kind has leaden-silvery leaves. Peperomias are particularly suited for growing in terrariums. They need a moist, humusy soil, shade, and a warm, humid atmosphere.

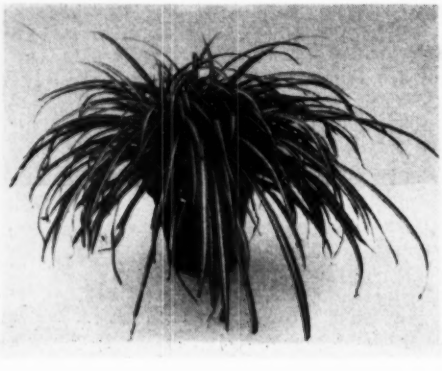
Sedum Morganianum, a succulent with drooping stems and small fleshy leaves, is suitable for growing in porous soil in hanging baskets. Excessive wetness is detrimental. Light shade from the strongest summer sun is advantageous. A temperature range of 50-60 degrees is satisfactory.

Pittosporum Tobira which is grown outdoors in the South as a large evergreen shrub, is attractive when young to be grown as a pot specimen in cool rooms in sun or shade. It grows slowly and requires no special care.

Philodendron oxycardium, often misnamed *P. cordatum*, is the most popu-

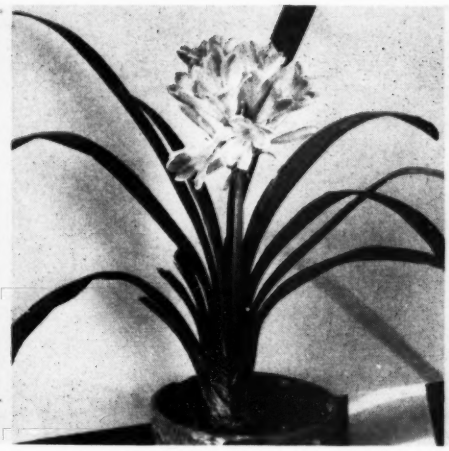
11. Caladium

12. *Chlorophytum elatum vittatum*

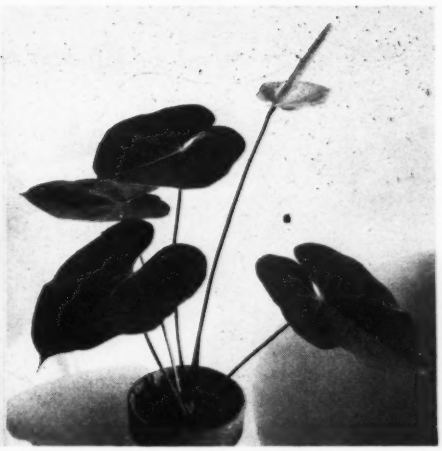


13. *Senecio mikanoides*

14. *Spathiphyllum floribundum*



15. *Clivia miniata*



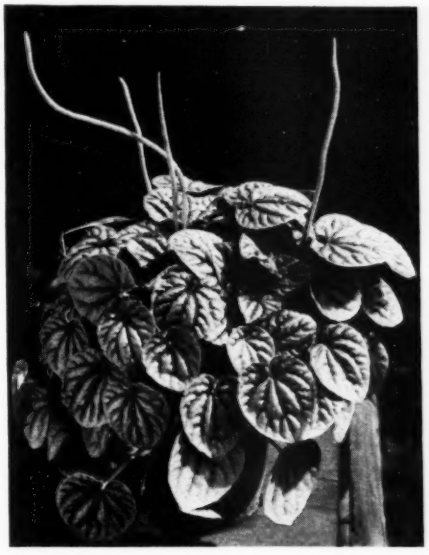
16. *Anthurium andreanum* var.

17. *Begonia semperflorens*

lar of philodendrons. A vining kind, it is tolerant of poor light. It does not thrive in excessively arid atmospheres but stands moderate atmospheric dryness remarkably well. A humusy, moderately moist soil is satisfactory.

Pteris longifolia is unusual in that it is a fern that withstands dry atmospheres better than most. Even in greenhouses devoted to the cultivation of cacti and other succulents it thrives. An ordinary soil, well-drained and maintained in a medium-moist condition, favors it.

Adiantum cuneatum, a tropical maidenhair fern, requires the moist air of a terrarium for its most successful growth. Shade and a well-drained, moist soil that contains an ample proportion of decayed organic matter are other requisites for its successful culture.



18. *Peperomia hederifolia*

Begonia coccinea and its varieties and hybrids (often called angel-wing begonias) are favorites for light windows where they receive shade from strong summer sun. They grow in fertile, well-drained soil kept pleasantly moist. Their pink or red flowers are in drooping clusters.

Jacobinia carnea, a tropical plant with large heads of pink flowers, has gained favor among house plant fans. It needs shade, a warm, moist atmosphere and a soil that contains an abundance of organic matter. A terrarium affords the best indoor conditions for this kind.

Passiflora alato-caerulea is an elegant vine that may be grown in a warm sunroom. It thrives in ordinary soil and in spring and summer bears large attractive, blue and cream-colored flowers.

19. *Sedum Morganianum*

Noteworthy Trees and Shrubs

By Jake Gerling

Closeup of the lily-of-the-valley-like flowers and attractive leaves of the sorrel tree.

The sorrel tree, *Oxydendron arboreum*, is a very pleasing American ornamental.

At the sixth annual Connecticut Nurserymen's Short Course, Jake Gerling. Superintendent of Maintenance, Parks and Playgrounds of Rochester, New York, emphasized the advantages of using the right tree in the right place from a functional and maintenance standpoint. In the introduction to his talk, Mr. Gerling paid tribute to Bernard H. Slavin, retired superintendent of the Rochester Park Department who, in his fifty years of devoted service, made noteworthy contributions to horticulture. Many of the specimens discussed and illustrated by Mr. Gerling were the results of Mr. Slavin's efforts in locating, propagating and eventually planting in Durant-Eastman Park. Following are some of his remarks.

Superior Small Trees

Since there is no longer the need for shade along city streets that existed fifty years ago, it is obviously not desirable to plant large trees, such as the American elm where the cost of pruning, spraying for disease, and eventual removal because of age debilitation make its upkeep impractical. The silver maple, *Acer saccharinum,* also has a marked tendency to heave sidewalks and a street planting of this tree, spaced at only twenty-foot intervals, is certain to result eventually in costly maintenance.

When and where use of the American elm is advisable, *Ulmus americana ascendens* is a clon having a strong central mass of upright lateral branches and does not have the tendency to buttress as heavily at ground level as do conventional types.

Another clon, *Acer platanoides erectum,* Slavin f., has a very stiff branched effect with the lateral branches coming out at practically right angles and then sweeping upwards. When juvenile, it has a formal pyramidal shape; by maturity it achieves a magnificent columnar form. This upright Norway maple is adaptable for situations requiring a formal columnar tree, particularly under adverse conditions.

The columnar form of sugar maple, called 'Temple's Upright,' *Acer saccharum columnare*, is a multiple-branched, broadly terete tree desirable because of its resistance to storm damage and its attractive fall color. 'Temple's Upright' can be used to advantage where streets or tree belts are narrow or where a house has a shallow set-back.

The upright form of black maple, *Acer nigrum fastigiata*, is superior to the sugar maple as a street tree in Rochester.

Tilia americana fastigiata, the up-

right form of American linden, is a fine specimen for a limited lawn area. *Tilia cordata,* the European littleleaf linden, and *T. petiolaris,* the silver weeping linden, should make a place for themselves in today's limited-area plantings.

The Japanese horse chestnut, *Aesculus turbinata,* is an effective street tree and its fallen petals no more nuisance than those of a magnolia.

The Japanese tree lilac, *Syringa amurensis japonica,* has large panicles of creamy white flowers that may be as much as eighteen inches long. It has safely withstood a temperature of 21° below zero. Another fine flowering tree is the Chinese scholar or Japanese pagoda tree, *Sophora japonica,* which has lovely white flowers in August and lustrous dark green compound leaves.

Three interesting ornamental trees, deserving wider use, are the Turkey oak, Constantinople hazelnut, and Katsura tree. Turkey oak *(Quercus Cerris)* may attain a height of sixty to seventy feet, is hardy, and one of the last trees to change color in the fall—many of its leaves persist all winter. The Constantinople hazelnut, *Corylus Colurna,* has a very pleasing form, light gray bark, attractive dark green foliage and interesting clusters of fruit. The Katsura tree, *Cercidiphyllum japonicum,* has attractive heart-shaped leaves which are purplish red when unfolding in spring and change to a pleasing clear yellow in fall.

Seldom-Used Narrowleaf Evergreens

Abies lasiocarpa arizonica, a form of Rocky Mountain blue fir, grows more slowly in the East and merits wider use as a specimen. It will not outgrow an area as quickly as most firs. Its desirable characteristics include outstanding foliage and freedom from gall and canker unfortunately encountered on many evergreens. *Abies cephalonica Apollinis,* the Apollo Greek fir, is to be recommended also as an attractive specimen, well suited to the eastern area. *A. Nordmanniana,* the Nordmann fir, although a larger tree has much to commend it, being very hardy and doing well in this section of the country.

Two forms of *Pseudotsuga taxifolia,* the Rocky Mountain Douglas fir, are highly desirable and it is hoped that nurserymen will make them more readily available to home gardeners. The first, *P. t. pyramidetta,* was selected and raised by Mr. Slavin and is a formal, compact specimen. The second, *P. t. pumila,* is very dwarf; at approximately thirty-six years of age a specimen in Durand-Eastman Park had reached only twelve inches in height.

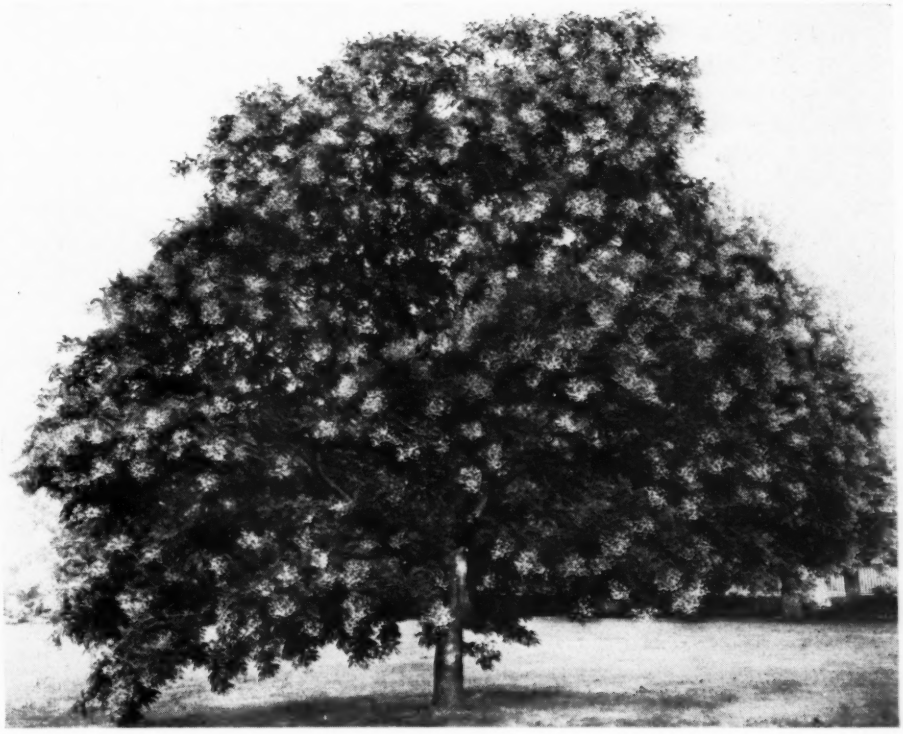
There are four pines that are all too seldom planted — the first being *Pinus nigra pyramidalis.* This pyramidal black pine is a very formal hardy evergreen, with a rich dark green foliage and interesting staminate flowers. Another form of black pine, named *P. n. Hornibrookiana* by Mr. Slavin, had grown only three feet tall and four feet wide after thirty-eight years; it was originally propagated from a witch's broom. A dwarf form of Mugo pine, *Pinus Mugo Slavinii,* and a slow-growing, globe-shaped seedling from a dwarf Scotch pine (this is not yet named nor available in quantity) are well adapted for the rock garden.

The last of this group of narrow leaf evergreens is an interesting dwarf form of Canadian hemlock, *Tsuga canadensis pumila.* A specimen forty years old is only seven feet high.

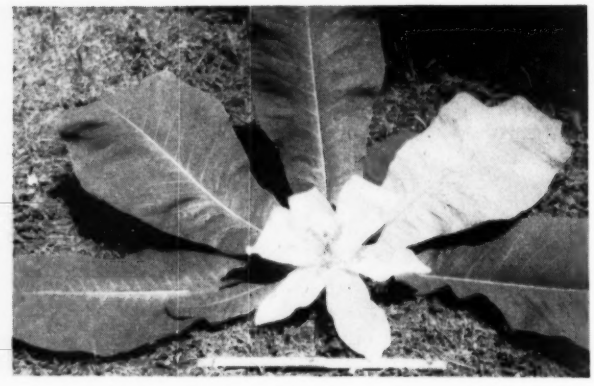
Some Unusual Maples

A selected form of *Acer rubrum globosum* named 'Spectacular' develops a beautiful globular head, has pleasing gray bark and exceptional flowers larger and more attractive than those of most red maples. It is tolerant of sandy dry soil. For those who prefer a well-shaped tree with leaves that are yellow in spring and change to green later, there is *A. Pseudo-Platanus Worleei.* This sycamore maple is very hardy and will grow in poor soil. Another unusual maple is *A. cappadocicum,* the coliseum maple, a rather light-branched, well-shaped tree with dark, greenish blue foliage. A novelty is the golden form of Norway maple, *A. platanoides aureo-marginatum,* whose leaves have

Closeup of the white flowers and lustrous dark green leaves of the Japanese pagoda tree.



This fine specimen of the Japanese pagoda tree, *Sophora japonica,* is to be seen on the grounds of The New York Botanical Garden.



The bigleaf magnolia, *Magnolia macrophylla*, is a seldom-seen flowering tree. Here it is growing in Rochester, New York.

The flowers, leaf, and under side of leaf of *M. macrophylla*.

a very definite emarginate yellow color, whereas the variety *variegatum* is described in Rehder's MANUAL OF CULTIVATED TREES AND SHRUBS as having white blotches on the leaves.

Acer griseum, the paperbark or gray maple, has the double attraction of delicate compound leaves, which turn into an attractive fall color in some areas, and the rich cinnamon-brown, papery bark, which exfoliates in a manner similar to the bark of the paper birch. Another interesting small maple is *A. tegmentosum,* the Korean striped or Manchu striped maple; a specimen in the Rochester parks has reached a height of twenty-five feet in forty years. Similar to the native *A. pensylvanicum*, which is reluctant to grow well in open locations, *A. tegmentosum* does not, however, require that its roots be moist and have a protective shade covering. This hardy tree has a beautiful green and white striped bark and attractive foliage that turns a clear yellow in autumn. Still another choice small maple for specimen planting is *A. Ginnalla*, the Amur maple. This very hardy tree attains a mature height of twenty feet; it has good summer foliage that becomes a brilliant red in fall. *A. sinecaensis*, a Slavin cross between *A. saccharum* and *A. leucoderme* (the chalk maple) has the good autumnal coloring of the former species, the light gray bark of the latter, and a mature height of about twenty-five feet. These four maples, all excellent small specimen trees for planting on the small home grounds, should be made more readily available by nurserymen.

FASTIGIATE SPECIMENS

Carpinus caroliniana fastigiata, a Slavin introduction of the upright Carolina hornbeam, has proved to be hardy and practically immune to most insects and diseases. Its leaves have a good orange-yellow fall color.

Quercus Robur fastigiata, the pyramidal English oak, a hardy and attractive tree, matures about the height of a four-story building. It propagates from seed with a high percentage of the seedlings coming "true."

Two evergreens among the best of the upright forms for this section of the country are *Pinus sylvestris fastigiata,* the pyramidal Scotch pine, which makes an excellent hardy, formal accent plant; and *Thuja occidentalis fastigiata,* which has a stiff central leader and fastigiate branches that are not damaged by snow and sleet.

FLOWERING TREES AND SHRUBS

Cornus controversa is particularly effective with modern architecture, because of its unusual horizontal branches and dense foliage that assumes a good red autumnal color.

The very first deciduous tree to leaf out in spring is the European bird cherry, *Prunus Padus.* This tree produces an abundance of small white flowers similar to those of the native choke cherry, and the fruit provides food for birds. It can be kept at almost any height by proper pruning.

Prunus serrulata Lannesiana 'Sirotae,' *Malus ioensis fimbriata* and *M.* 'Katherine,' a hybrid seedling, are splendid flowering trees for the smaller home properties. So is *Oxydendrum arboreum*, the sorrel tree. One of the most pleasing of native trees, found from Pennsylvania to Florida and Louisiana, it is hardy north of its natural range (does well in Rochester); yet it is sorely neglected. This is a small ornamental tree with such desirable characteristics as lily-of-the-valley-like flowers, excellent autumnal foliage, from deep pink to scarlet, and attractive seed pods that vary from dark golden-yellow to silvery gray when ripening.

A seldom-seen flowering tree is *Magnolia macrophylla,* which may bear leaves up to thirty inches long and fragrant, white flowers as much as twelve inches in diameter. This big leaf magnolia requires some protection from winter sun and winds when grown as far north as Rochester. *M. Sieboldii* is an aristocrat of the genus. Desirable characteristics of this Japanese or Oyama magnolia are its small glossy leaves and very lovely white flowers with magenta stamens, which are borne for several weeks.

Of the witch-hazels, the Chinese, *Hamamelis mollis,* is preferable. In late February or early March this bears fragrant, orange to yellow flowers that are almost twice the size of the flowers of our native species. Careful selection of plants to be propagated from cuttings is important, as some plants have a tendency to hold their leaves throughout the winter and this detracts from the effective flower display. The fall color of the leaves varies from pure yellow to red.

Fothergilla major is another happy choice among flowering shrubs for small home gardens, as is *Daphne Mezereum* which carries fragrant, rose-purple flowers around the middle of March and bright red fruits in early summer.

WHAT IS A CULTIVAR?

By George H. M. Lawrence

Reprinted from **Baileya** 3:177-181, 1955, a quarterly journal of horticultural taxonomy published at the Bailey Hortorium of the New York State College of Agriculture, a unit of the State University of New York, at Cornell University.

DURING THE LAST five years, a word unfamiliar to many horticulturists has crept into our terminology. It is "cultivar": a word that denotes both a category and a term. By some it is treated in either instance as an unnecessary evil, one to be ignored, rejected, bypassed; by others it is considered superfluous and meaningless; but for an increasing number—more especially in other countries—it is a very real category, not at all new, and one having biological significance. The category and the term deserve better treatment. For this reason, better understanding of them is needed.

A brief review of this and related categories should help to see all in proper perspective. The species is the basic unit of classification. Its scientific name is written in Latin, and is called a binomial, for it is a name of two words — the generic name, such as *Rosa*, plus the specific epithet, such as *canina*, with the binomial expressed as *Rosa canina*. Species vary. These variants for centuries have been known to English-speaking peoples as varieties. From this usage the botanist created and gave formal designation to a category whose Latin name is "varietas," and which is universally abbreviated "var." Modern botanical nomenclature dates from the time of Linnaeus, more specifically from the date of the publication of his two-volume work, SPECIES PLANTARUM, in 1753. In that work he recognized the category varietas but usually prefixed his varieties with letters from the Greek alphabet (such as α, β, γ, etc.) instead of var.

A study of the origins of the plants designated by Linnaeus as variants shows more of them to have been of garden than of spontaneous origin. For this, and for other reasons, some horticulturists have held that, if there is a substantial biological difference between the "variety" of botanists and that of gardeners, then priority of usage would leave it with the gardeners, and would place on the botanists the responsibility of finding a new term for their species-variant as it occurs in the wild. The botanists have not done so, and because their literature is so extensive and is the product of formal nomenclature procedures of long-standing, it is not to be expected that they will. It is best to forget that alternative. If it is agreed that a biological difference does exist between the variety of the botanist and that of the horticulturist, then the horticulturist must seek the new term.

How does the variety differ from the cultivar? In nature, plants are generally populations—that is, groups of individual plants growing together. Different populations may occupy different kinds of habitats and yet may have so many features in common as to be considered components of a single species. If a hypothetical plant species is composed (let us say) of three population-groups occurring in three different habitats—alpine, grassy-meadow, and desert—it may be that each of the three populations has been growing in its area and environment for hundreds of centuries, although originally each migrated to its present area from a common source. Before this migration took place, the characters by which we now recognize the three populations to be a single species were present, and were a part of the genetic makeup. They are heritable characters.

Individuals were able to survive during the period of migration, provided that they were sufficiently different from their ancestors to compete successfully in the new environment. Continuation of this migration required, furthermore, that the new generations be able to compete successfully against all opposition, and to reproduce by seed. By these means the areas that the species occupied expanded and moved outward from the point of origin. Plants not having the vigor and other characters essential for success in the new environments died, and, as they did so, some of the characters of former generations were lost. Many generations of inbreeding, during which the accumulated adaptive characters became more or less fixed by genetic combinations, resulted in changes in the appearance of the plants—changes of sufficient magnitude for the different populations to be recognized as distinct varieties. As the three hypothetical environments (referred to above) became more different, so did the appearance, in some degree, of the three populations.

These different populations of a species are usually capable of interbreeding freely. When they do interbreed, hybrids between them are produced. Similarly, individuals within a population interbreed freely and the population itself is perpetuated. These individual plants are usually as potentially variable in their genetic composition as is one man from another. This variability may be observed in every sexually-reproducing population of wild plant.

Let us assume that the three populations of this hypothetical species grow and flourish, but are unknown to any man until a botanist "invades" the desert area, and on this first trip finds and collects only one of the three populations. He presses and dries it, and makes note of its salient features and location. When he examines his collections later, he finds this plant unlike any known before and, after careful study, correctly concludes it to be a new species, and names it *Fiscus aridus*. The dried specimen he has prepared becomes the type of the species. The place where it was collected is known as the type station or locality. On a second trip, the botanist ascends a mountain not far from the arid region of his new species of *Fiscus*. There he finds the alpine variant of this species. Because it is that same species, it must have the same binomial *(Fiscus aridus)*, but since he considers it to be varietally distinct, a distinguishing epithet must be given it. He names it, then, *Fiscus aridus* var. *alpinus*. In order to distinguish the original, desert form from the new var. *alpinus*, the code of nomenclature specifies that it be called *Fiscus aridus* var. *aridus*. Perhaps later the third variant, of the moist meadow habitat, is found and named *Fiscus aridus* var. *aquaticus*. Together the three varieties comprise the species.

It is only by chance that the botanist has found the arid-habitat form before the alpine and meadow forms. Biologically, it may be that the last variant occupies an environment more nearly like that of the population that was

ancestral to the three, and hence its characters may have changed the least from those of the ancestral form. If so, this is the biological type of the species. Thus we note that the nomenclatural type of a species (in this case, *Fiscus aridus* var. *aridus*) may or may not be the biological type. All three compose the species; a description of the species must include the characters of them all.

Before the era when men like Darwin, Mendel, and DeVries established the doctrines of evolution, this biological concept of a species could not exist. Botanists then described the first population encountered as the species, and, while recognizing the later-discovered variants as allied to this species, treated them as appendages, as something to be tacked on to the original species. Thus, the description of the species was not enlarged to include the variants as they were discovered. In most contemporary horticultural literature, including Bailey's HORTUS SECOND, and the MANUAL OF CULTIVATED PLANTS, the description accompanying the binomial is usually only that of the typical variant of the species—the varieties have been added as appendages. It is only very recently that taxonomic botanists have recognized the biological significance of these matters. It is not yet time to impose similar pedantics on every garden lover. Nevertheless, the informed plantsman should be aware of these things.

The significant feature of the category variety as used by botanists is that it usually designates one of two or more natural populations of a species; individual members of a population interbreed freely with one another and reproduce the population by means of seeds, though among the individuals there may exist a greater variability of characters than is at first apparent.

The plant that a horticulturist calls a variety is usually a product of the garden. It does not represent a self-perpetuating population of wild plants. When grown from seed, it usually represents a selection, chosen for particular attributes, or it is produced by seed from parents or ancestors that have been selected and bred for particular qualities. In general, it has no counterpart in the wild, nor could it long survive there without reversion to an ancestral type. When grown from a commercial seed packet, one individual does not differ significantly from another because the heritable features have been more or less stabilized for that generation by controlled breeding. It does not represent a freely interbreeding population perpetuating itself for a large number of generations. Furthermore, many—probably most—of the so-called varieties of the garden are perpetuated not by sexual means (i.e., by seeds), but by asexual means, such as by cuttings, grafts, or division. These asexually maintained sorts are clones. Like the seed-produced cultivated varieties, they are biologically markedly different from the varieties of the botanist. All of the thousands of cultivated so-called varieties of gladioluses, dahlias, irises, or apples, to mention a few, are clones.

The question arises, if it be agreed that there is a marked biological distinction between the variety of the botanist and that of the gardener or farmer, of why it is necessary to accept two categories. Very frankly, it is not. Botanists, agriculturists, and gardeners have managed for centuries with only the one category, varietas. Even the most sanguine proponents of the category "cultivar" do not expect the man in the street or of the home garden to switch from referring to his flowers as varieties to calling them cultivars. The object of this recognition of the category of cultivar, as being biologically distinct from the variety, is to provide a more precise nomenclature for those persons who require or will use this precision. The category has been recognized among vegetable and seed producers and others in Europe for over half a century. In the Scandinavian, Germanic, and Slavic literature it is designated as "Stamm" or "Sorte" or a linguistic variant of those terms. This is true of many listings in European seed catalogues, as well as of those in encyclopedic works. Certainly it is important to know whether a variant will or will not come reasonably true from seed. It is equally important to know whether it must be propagated asexually. This information is indicated by recognition of the distinctness of the category cultivar. The importance of the category to the horticulturist increases with his own increase in plant knowledge. Whether it be appreciated or not by all of us, the category of cultivar is with us. It is entrenched in Europe and the number of adoptions in American literature increases steadily. Its adoption in the International Code of Nomenclature for Cultivated Plants follows a careful study of the situation, and evidences consideration of its recognition and adoption by plantsmen.

The category, by definition, is to be applied to lines highly selected to a standard type, to clones, and to all garden variants which have originated or are maintained in cultivation and which would not usually be given names in Latin form. A clone is a single plant of a cultivar. That is, from a particular cultivar there may be selected any number of clones, or only a single clone may be named. If the clone is a mutant or sport taken from a wild plant, it automatically becomes a cultivar as soon as it is severed from its "parent" and brought into cultivation. Conversely, some populations that maintain themselves in the wild as botanical varieties may prove to be cultivated subjects by direct transfer to the garden. For these, perpetuated by seed produced by random and free-breeding, the category of varietas (variety) is retained. Plants in the garden but of this origin are treated as members of botanical categories. In some genera, the cultivated components of a species may include varieties, cultivars, and clones.

The term to be given this category, now becoming known as "cultivar," has also been challenged. In fact, in one early provisional draft of the present Code, it was treated as "hort. var." (horticultural variety). It has been agreed in nomenclatural discussions at the international level that the term must be based on Latin. This ruled out the terms "Sorte" and "Stamm." All persons concerned acknowledged the category to represent a cultivated variety. Historically, the term appears to have originated with L. H. Bailey, who wrote in 1923 ("Gentes Herbarum" 1: 113-114):

> The cultigen is a species, or its equivalent, that has appeared under domestication — the plant is cultigenous. I now propose another name, cultivar, for a botanical variety, or for a race subordinate to species, that has originated under cultivation; it is not necessarily, however, referable to a recognized botanical species. It is essentially the equivalent

of the botanical variety except in respect to its origin.

Some people in this country have used the term "Hort. form." for this category. It is currently used in some of our government publications. This is admission of the validity of the category. The problem, if there be one, is that of accepting a name. That of cultivar is euphonious. It is free from ambiguity. It serves a purpose.

Material for HORTUS III, following the International Code, is based on the acceptance of the category and of the term cultivar. Likewise, the term clone (abbreviated to cl.) is also used when appropriate. It is in a reference work of this character, or in a check-list of fancy-name plants, that the value of these distinctions are paramount. By examples of this type, the professional horticulturist is provided an added tool for his use. The term is gradually becoming adopted in catalogues of American specialists. There is no reason why producers of general seed or plant catalogues must adopt it. Certainly, the vernacular use of variety is not going to be displaced in the foreseeable future. Those wishing to retain it will continue to do so without impeding the gradual increase in preparation and use of a more precise literature. At the same time, we all recognize that a change in the old order is occurring, that this change is being accepted, and that for those who strive to add greater precision to our horticultural literature, this change reflects progress.

The new International Code of Nomenclature for Cultivated Plants, published February 1, 1958, defines "cultivar" in Article 5, page 11 as: The term "cultivar" (variety) denotes an assemblage of cultivated individuals which are distinguished by any characters (morphological, physiological, cytological, chemical or others) significant for the purposes of agriculture, forestry or horticulture and which, when reproduced (sexually or asexually) retain their distinguishing feature.

"FIFTY YEARS OF BOTANY"
A Worthy Endeavor

WE AT The New York Botanical Garden feel closely associated with the book FIFTY YEARS OF BOTANY. Our Director, Dr. William C. Steere, edited it. Our Director Emeritus, Dr. William J. Robbins, contributed the article on "Physiological Aspects of Aging in Plants," Dr. Bassett Maguire the article on "Highlights of Botanical Exploration in the New World," and Dr. Edmund H. Fulling the article on "Botanical Aspects of the Paper-Pulp and Tanning Industries in the United States, an Economical and Historical Survey." Its pages contain photographs of Dr. Robbins, Dr. Henry Allan Gleason and Dr. Bernard Ogilvie Dodge to whom certificates of merit were awarded at the fiftieth anniversary meeting of the Botanical Society of America held at the University of Connecticut in August 1957.

We are honored that botanists identified with The New York Botanical Garden were chosen by their colleagues to participate in this "Golden Jubilee Volume of the Botanical Society of America." The forty articles cover a wide range of subjects, describing the progress in many areas and sub-areas of the plant sciences. It is a book not only for the plant scientists themselves, but for the intelligent person who is interested in the various phases of botany and horticulture. In fact, we believe that every lay person seriously interested in botany and horticulture, and especially those who are members of such an institution as The New York Botanical Garden, should have this book in his library. It is not the kind of book to be borrowed and read in one sitting; it is the kind of book to be read slowly and reread. Then one will gain a genuine appreciation of what botanists do, what they have done these fifty years, and what they will be able to accomplish in the future, if their efforts to expand and develop their fields of activity are encouraged and supported.

The articles, scientifically accurate and authentic, yet as non-technical as possible, are stimulating and thought-provoking. To mention a few: "Microbes — Man's Mighty Midgets" by Kenneth B. Raper; "The Fight with the Fungi, or the Rusts and Rots that Rob Us, the Blasts and Blights that Beset Us" by James G. Horsfall; "Problems in Preventing Plant Disease Epidemics" by E. C. Stakman, "Soil-Plant Relationships and Plant Nutrition" by A. G. Norman; "Botany and Medicine" by W. H. Youngken, Jr.; "Botanic Gardens — What Role Today?" by George S. Avery, Jr.; "Arboreta and Botanical Gardens in the Field of Plant Sciences and Human Welfare" by R. J. Seibert.

With permission of the editor, Dr. Steere, of the American Journal of Botany in whose pages all but three of the articles originally appeared, and of the publishers, McGraw-Hill Book Co., Inc., we present the following which, we believe, will whet our readers' appetites for the full contents.

From Chapter 30, "Botany for Living" by Clarence J. Hylander:

"At significant milestones, such as the Golden Jubilee of the Botanical Society of America, it is natural to pause and review the progress made by contributions of American botany. But our appraisal should not be entirely with a backward look into the accomplishments of the past. We should also face in the other direction, with a forward look to what science can do in the years to come. . . .

"We are all aware of the far-reaching technological changes which have taken place in the last decades and which have had a great influence on our daily lives. . . . Working hours for the average man are being shortened and leisure hours proportionately increased. . . . How has this "new look" in the economic and social picture affected the living habits of the average American and hence the average student and what bearing does it have on the educational role of botany?"

Dr. Hylander discusses three trends —first, the reversal of the former population shift from country to city, now from city to suburb and outlying hinterland; second, the "increasing popular pastime of trips in the family car"; and third, the increasing longevity of

(Continued on page 222)

HOUSEWIFE'S GARDEN (from page 201)

After removing the bristles the Indians ate the fruit raw or sometimes stewed. The mucilaginous juice of the stems was used as a sizing to fix the colors painted on hides.

Not even in the interest of education would I dig up some of my precious orange milkweed, *Asclepias tuberosa.* It had taken three years to get plants from seed sown when ripe in the fall, and I need them to bloom in the lavender bed. The combination of colors, when both herbs flowered, was striking enough to bring exclamations from those who saw the garden, even from a distance. Thus, I could not sacrifice a root to take to school. Better just to read to the children the account of the digging by the root of the orange milkweed by certain members of the Omaha tribe who were called the "Shell Society." It was their province to gather this herb and administer it medicinally with certain rites. The ceremonials connected with digging, preparing and consecrating the roots took four days, which seemed to be the magic number used in many rites of the Plains tribes. The root was eaten raw for bronchial and pulmonary troubles and chewed and put into wounds or old, obstinate sores.

It would have been impossible to tell the children how many of the Indian remedies were prepared by chewing and how often the source book referred to particular plants being chewed as "gum." They would have been even less content to be civilized children in a present-day school, where chewing gum is one of the worst offenses. However, seeds of meadow rue and wild columbine were chewed and the resulting mess pasted about themselves by Indian braves to act as perfume, said to be particularly noticeable when the weather was damp. Ground seeds of columbine, lovely transplant in our rock garden where it clings to the limestone boulders in crevices which seem to hold no soil, were considered a love charm by the native Americans. The pulverized seeds were rubbed on the palms of the hands and the suitor contrived to shake hands with the desired one, whose heart would immediately turn towards him. Omaha girls were somewhat in fear of the plant because of this supposed effect and because a strong whiff of the odor of the seed was believed to cause nosebleed. Thus, the young men took playful delight in frightening girls with columbine seed powder thrust suddenly under their noses. Indian girls evidently would not be chilled by the old "caterpillar down-the-back" trick.

Joe-pye-weed and boneset were shown to the children because of their colorful names; both eupatoriums were used in treating fevers and shock from broken bones. And to show that the white settlers brought some useful things to the Indians, I had a jar full of water and flowering tops of bouncing bet, *Saponaria officinalis.* By shaking the jar the youngsters could work up quite a "head of suds." The leaves and blossoms contain a foaming agent, saponin, which was used as the first detergent. Colonists washed their clothes with saponaria when soap was unobtainable, hence the name of soapwork.

GASPESIAN HOLIDAY (from page 197)

worth exploring. Growing in a peaty hummock was the marsh pea *(Lathyrus palustris)* and *Dryopteris spinulosa.* Nearby was arrow grass *(Triglochin maritimum), Ranunculus Cymbalaria, Arenaria lateriflora* and again *Pyrola secunda obtusata* and *Cornus suecica.* With these and a few grasses in the vasculum, on we went. What mountains to ascend and descend! Steeper and steeper, longer and longer are the slopes through heavily-forested land until at last, down the last long descent into Percé. There it was in the late afternoon sun with the famous rock just out from shore, just beyond it Bonaventure Island, and Mont Ste. Anne with its red rock summit rising behind the town. Here was a place to rest and enjoy the beauty of two perfect days. There was leisure for watching the fishing boats bring in their cod from the sea, time for a thrilling trip around Bonaventure to marvel at thousands of sea-birds hovering in the crevices of its ledgey east side, time to climb a high hill at the side of Mont Ste. Anne and sit in a meadow full of flowers looking to the straight, clean line of the far-away horizon. Only a few plants were collected—*Shepherdia canadensis, Diervilla Lonicera,* and *Lathyrus pratensis* —but what beauty!

At Grande-Rivière a stop was rewarded by finding an acre or more practically solid with camassia growing on sizeable mounds near the sea, with *Smilacina stellata* in fruit for company.

After the north shore drive and Percé, the scenery became quiet as we wound in and out along the Baie des Chaleurs. We even missed hearing French when we stopped at Chandler for the last night on the fascinating Gaspé Peninsula.

Near Paspébiac a rainy visit to a government-owned nursery primarily concerned with forest problems but displaying a very interesting group of hedges suitable for this northern climate—well-cared-for and clearly identified both in French and English. The new plants added to our collection here were not so exciting — the sow thistle *(Sonchus arvensis glabrescens), Agrimonia gryposepala, Polygonum sagittatum, Melampyrum lineare*; these, and the sea milkwort, *Glaux maritima,* a *Scirpus* sp. and a *Bromus* sp.

At St. Omer, *Centaurea nigra,* which grew in abundance by the roadside, was finally gathered. With a dense fog ahead we were sold on taking a ferry from Escumenac to Dalhousie to continue down through New Brunswick and back along the coast of Maine.

ROSES (from page 193)

club that was sponsoring a tour of members' gardens asked that our garden be included and that it be made the last garden on the list. They arrived about eight o'clock — and left about eleven!

Already we are making plans for starting another rose bed. My husband insists on preparing the bed himself, although I would like to get some help. He says the help that I have gotten in

the past just don't make the beds to his liking. He digs the beds about two feet deep and four feet wide. As our soil is very porous, he doesn't put any drains in the ground. The top soil is mixed thoroughly with humus and put back in the hole.

The bed is allowed to settle until our spring order is delivered and then it is raked over. The roses are planted two feet apart each way, cut back and hilled up. When the sun gets warm, we scrape the dirt away from the bushes and then mulch. My husband's system must work, because bushes that were planted this past spring are now, many of them, three and four feet tall.

We like to keep our floribundas in their own beds, but now we have started a hedge of them in the front yard. We hope to move all of them to that area in the near future. Among the floribundas, we like 'Spartan' and 'Ma Perkins' very much. One of our 'Ma Perkins' bushes grew up to more than six feet tall and spread so much that we finally had to move it in order to give the others a chance to breathe and get some sunshine.

In the spring of 1957 we suffered a very heart-rending experience. Spring came with a rush, and very early that year, the usual way it does in the Washington area. The bushes began to leaf out, and some of them were actually in bloom, when bang! there came a big frost and freeze. Temperatures went down, and we could only stand by and watch the lovely new growth turn black and die. When it was over, with my heart heavy, I started cutting the dead growth away. On many of the bushes I was forced to cut down to the bud union to find good wood. We later found it to be a blessing in disguise, because we lost only a very few bushes and had better and more blooms than we ever had before!

It is my firm belief that the many hours we spend in the garden, both during the day and at night, have made us both happier and have given us both better health. For this one reason, if for no other, I encourage all my friends to grow roses, and to exhibit those they grow. I feel that this will make them want to get out in their own yard, putter with and talk to their own roses, and ultimately enjoy the happiness and health that we have found in our garden. Also, they will meet people from all walks of life and from all parts of the country who will talk the same language, and they will find these new found friends to be very nice, too.

KINGWOOD CENTER (from page 200)

after New Year's Day each year. Meantime, major decorating for the holidays goes on in Kingwood Hall, on the exterior of the buildings and at the front gate. The eighteenth century French architecture of the Hall lends itself beautifully to such decorations, but because of the scale of the buildings and other architectural features, all decorations have to be super-sized. For example, the front gate posts are about fourteen feet high and are topped by six-foot urns; each year a pair of plaque-like decorations is made, each of which must be six feet long.

An open house (without refreshments) on the Sunday after Christmas 1957 was enjoyed by a thousand visitors between the hours of 1:30 and 4:30 in the afternoon.

In late winter a six weeks' long "Budget Landscaping" course offers the opportunity to eighteen Mansfield families to study, and with help actually to develop a plan for the development of their properties. This course completed its fifth year in 1958; there is always a waiting list of applicants.

The displays, the lectures, the telephone calls and garden questions answered, the crowds of visitors who come to Kingwood, the organizations which make use of its facilities, prove without doubt the usefulness of Kingwood Center to the Mansfield area (population about sixty-thousand) and the need for similar centers throughout the country in smaller communities.

HOME LANDSCAPING (from page 203)

owners are becoming as discriminating in the selection of stone as they have been in the selection of rugs.

These are a few of the developments in landscape architecture which our new ranch houses are producing; all new, all exciting, all denoting new skill on the part of our great new class of homemakers.

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BOOK REVIEWS

YOUR GARDEN IN TOWN. Ruth Marie Peters. 180 pages, illustrated, indexed. Henry Holt & Co., New York. 1957. $3.75

Old gardeners will wish that they had read this book many mistakes ago. Often it is only by experience that one learns the wisdom of planning before planting, but for either the old gardener who is correcting past mistakes or the young one anxious to avoid first ones, the chapters on planning are invaluable. They emphasize two important points, that the garden without imagination may be monotonous, but that imagination unrestrained by careful thought given to the physical features involved is not likely to produce a satisfactory garden.

Under planning the author first lists a study of the assets and disadvantages of the city garden. Assets include close proximity to living quarters so that the garden becomes an extension of them, a retreat in summer and a pleasant design to be seen from windows in winter. In many cases fences or walls give much desired privacy and also protection which wards off early frosts and extends the growing season. Even the small size of a city garden may be an asset in that it encourages the imagination to make the most of a situation—as in using potted plants to achieve a desired design or color scheme.

On the subject of disadvantages she says: "Of course there are always problems, but once recognized they can be circumvented even before you turn the first spadeful of earth. It is a good idea to enumerate the disadvantages of your own garden area, then plan your program of operation to avoid or eliminate them. If this is not entirely possible, make the best of existing situations." In industrial areas air pollution or soot may be troublesome. In any location there may be excessive shade or too much sun, damaging winds or too airless an enclosure. Adequate drainage and provision for watering must be insured.

The reviewer is tempted to quote at length from the chapter headed "Make the Most of What you Have," with its advice that: "The practical way to go about a garden project is to get plans down on paper first. Do this whether you start from scratch or renovate an existing garden... Begin by listing units you wish to include ... even in a small area it is a good idea to have one tiny spot for use as a work area ... consider the future as well as the present."

Then follows detailed instructions for actually drawing the plans, outlining the dimensions on graph paper, indicating compass points and existing permanent structures, then using tracing papers over the original graph plan and sketching in desired features for an overall effect. "Once the permanent items have been placed on your plan and the design of the garden evolved, the plants themselves are chosen." It is this last step which the beginning gardener is likely to take first and the book is highly valuable in encouraging him not to proceed in that order.

There are suggestions for various types of gardens, achieving variations in levels, erecting barriers and screens against either onlookers or winds, adding accessories, providing paths of types suitable to the particular garden, and other features, all illustrated by photographs. Directions are given for improving soil conditions, planting, cultivating, waging war against insects and diseases, watering, staking, mulching and winter protection. Detailed lists of plant material which give common and botanical names and information about suitable situations for growing add to its value as a reference book.

Miss Peters' summary is: "Every pot of earth, every foot of ground, is a potential garden. Country hearts that beat within city limits spur green thumbs to action... Wherever a garden is loved a garden grows."

DeETTE B. JACOBS
Morristown, N. J.

PRUNING MADE EASY. Edwin F. Steffek. 120 pages, illustrated, indexed. Henry Holt & Co., New York. 1958. $2.95

The why, when, where and how of pruning is very adequately covered in this small handbook. The answers are succinctly and for the most part very clearly described for the amateur, with the aid of drawings by the author.

The home owner, eager to be initiated into the know-how of pruning, will find here a gold mine of information. After he acquaints himself with clearly presented general principles, he can easily look up any individual shrub, tree, vine he may wish to prune. These are arranged in lists under appropriate heading chapters. The author includes every type of plant, from apples to nuts to wine grapes, as well as the all important ornamentals.

It is very pleasing to find "form" and "uses" in addition to care under each individual plant, especially the first, mostly neglected in publications. But it is disappointing that more stress has not been placed on the aesthetics of pruning — the beauty of a bit of landscape framed by a cleanly pruned arm of a tree, the thrill of an interesting silhouette brought about by judicious trimming! The chapter on evergreens does not have the same clarity of presentation as the rest of the book.

This handbook fills a long needed gap and I for one am happy for its appearance. It is a book I have already recommended to my students and clients who never fail to ask the questions which it answers.

DINA G. BAUMAN
Wilton, Conn.

FLOWERS NATIVE TO THE DEEP SOUTH. Caroline Dormon. 33 color plates and 102 line drawings by the author, indexed. MacFarland Press, 1958. Distributed by Claitor's Book Store, Baton Rouge, La. $7.50

FLOWERS NATIVE TO THE DEEP SOUTH is all things to all readers. Written for the layman, who, having found a new flower, cannot rest until it is named, it will be of equal use to botanists studying the flora of the Deep South, for Miss Dormon has tramped woods and fields and swamps with Dr. John K. Small and Dr. Edgar T. Wherry, and her text has been checked by Dr. George H. M. Lawrence. It is born of the marriage of true minds.

For the gardener it is a book written by a gardener—one of the best. Miss Dormon is not content with knowing the wild flowers in their haunts; she grows them herself, and tells what they need. She also tells what *not* to grow, begging gardeners to leave the fast vanishing *Lilium Catesbaei* in its bog if its habitat cannot be reproduced.

For the student of southern wild flowers it is full of information not to be found elsewhere, covering a wide area from the southeastern Atlantic Coast to central Texas and southern Arkansas. The descriptions of the flowers are clear and specific, and the drawings are all done from living plants.

For collectors of beautiful books it is a treasure, and will soon become a rare one, for the edition is limited.

ELIZABETH LAWRENCE
Charlotte, N. C.

SPRING FLORA OF THE DALLAS-FORT WORTH AREA TEXAS. Lloyd H. Shinners. 514 pages, indexed. Published by the author, Dallas, Texas. 1958. $5.75 (plus postage)

This treatment of about one thousand species of plants blooming by the first week of June in an area of about seven thousand square miles surrounding Dallas and Fort Worth is evidently intended for use in the author's spring flora course at Southern Methodist University, and it should serve this function well. It is also a preview of his nearly completed FLORA OF NORTH CENTRAL TEXAS. Botanists will welcome the clear keys and the abundant evidence of careful field observation, independent judgment, and even taxonomic insight, but they will be disturbed by the often provincial outlook, and appalled by the "new species" *Rosa ignota*. The type and only specimen of *R. ignota* is a "fragment 14 cm. long... undoubtedly... abnormal, and may belong to a previously described species, but none like it is known within more than one hundred and fifty miles of the type locality," and "repeated search has failed to produce any additional material."

ARTHUR J. CRONQUIST

A FLORA OF THE MARSHES OF CALIFORNIA. Herbert L. Mason. 878 pages, illustrated, indexed. University of California Press, Berkeley. 1957. $10

Everyone interested in the flora of California must have this beautiful book on his shelves. The pleasing typography, neat craftsmanship and particularly the three hundred and sixty-two pages of excellent line drawings make it not only a pleasure to read but one of the best illustrated floras. This is a scholarly volume, yet the discerning illustrations, that extend even to the key and glossary, open it up adequately for popular use. It is a fitting summation of a long-term program carried on under the joint auspices of the California Department of Fish and Game, the Federal Fish and Wildlife Service, and the Department of Botany of the University of California under Dr. Mason's competent direction. Exhaustive surveys of the marsh areas brought to light many additions to the known California flora.

The term "marshes" is broadly interpreted floristically to include, for example, alpine boggy meadows and the ephemeral vernal pools of the lowlands. Thus the included flora is much broader than the originally contemplated one of those plants occurring in the feeding and nesting areas along the major flyways of aquatic birds. In fact, the attempt is made to include, in addition to the aquatics, those species known to occur commonly on wet land. Thus some streamside trees such as *Umbellularia californica* and *Platanus racemosa* slipped in. All the Downingias are also included, although several of them spend most of their lives in drying soils, whereas an equally characteristic member of the vernal pool flora such as *Mimulus tricolor* is omitted, etc., etc. In general the author's arbitrary decisions are carefully considered and agreeable, the descriptions are full, pertinent synonymy is included, distribution is detailed and extralimital when necessary, and one

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In many of the articles, a new approach is utilized to point out how certain fields of plant science are important to man and his culture—and what the futures of these fields may be. Another departure in presentation is a certain light touch, whimsy, humor, or other author identification not usually found in scientific writing.

Since much of the information included in this volume is not found in regular textbooks in the field, it provides excellent supplementary material for any course in botany—from the elementary to the advanced level.

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gathers that more stress is given to taxonomic and nomenclatural questions than to ecological ones.

This authoritative volume is a tribute to Mason and his artists and is a brilliant addition to the floristic literature of California.

DAVID D. KECK

AUSTRALIAN NATIVE PLANTS—Their Propagation and Cultivation. A. M. Blombery. 107 pages, 8vo. Illustrated with line drawings. Angus & Robertson, Sydney, Australia. 1955. Reissued 1958. $2.75

Because many Australian plants have been found difficult subjects to multiply in nurseries in the United States, this book fills a definite need. The author writes from practical experience, and he suggests a good many cultural practices that will make the introduction of many Australian ornamentals a much easier job than it has proved in the past.

EDWIN A. MENNINGER
Stuart, Florida

THE FRIENDLY FUNGI. C. L. Duddington. 188 pages, illustrated, indexed. Macmillan, New York. 1957. (Printed in Great Britain). $4.50

The "friendly fungi" as defined by Duddington include the predacious fungi which usually live in soil where they capture or parasitize and kill eelworms (commonly known as nematodes in America). Since many nematodes cause considerable damage to important crops, these fungi are considered to be man's friends. The book summarizes in a non-technical language the knowledge accumulated by the author through his own studies over the past twenty years and by other workers during the past century. Two chapters are devoted to the "pernicious" nematodes, their characteristics, activities and control, both biologically and chemically. Then follows splendid accounts of the fungi as our allies, those which trap and capture the nematodes and those which are obligate parasites (developing within the bodies of the host nematodes). Next, the author reviews the work done in Hawaii, England and France in attempting to use the fungi in controlling the plant parasitic nematodes. Finally, methods of collecting, cultivating and examination of predacious fungi are given concluding with suggestions to amateurs and a list of references.

The book is written in a popular style making it fascinating to read. It undoubtedly will increase studies of these fungi by scientists and amateurs alike, and should stimulate additional investigations of the "friendly fungi" as possible means of controlling the nematode pests.

CLARK T. ROGERSON

THE MUSHROOM HUNTER'S FIELD GUIDE. Alexander H. Smith. 196 pages, illustrations, glossary. University of Michigan Press, Ann Arbor. 1958. $4.95

As indicated by the title, this book has been written especially for the hunter who collects mushrooms for eating. Dr. Smith, who certainly is America's most noted expert on mushrooms, has devised the field guide "to give the mushroom hunters better protection against serious mistakes than they now have." The book covers the edible and poisonous mushrooms which are most easily identified by their pictures. The guide is not designed to enable people to make scientifically accurate identifications. An excellent introduction reviews the mushroom as a plant, the parts of a mushroom, species of special interest to collectors in the western United States, edible mushrooms safe for beginners, mushrooms associated with certain trees, and where to find selected mushrooms according to season.

One hundred and twenty-four kinds of mushrooms are illustrated by black and white photographs. For each, notes on when and where to find it, important field characteristics, and edibility are given. Clear and easily used keys to the major groups and species under each group are provided.

Dr. Smith has included the diverse kinds of fleshy fungi which are popularly known as mushrooms. Thus true morels, false morels, puffballs, hedgehog mushrooms, coral mushrooms, chanterelles, polypores, boletes and gilled mushrooms are considered. Sixty-nine of the species treated are gilled mushrooms.

In the reviewer's opinion, this is the best of the available books dealing with common edible and poisonous mushrooms. It is unique in being a field guide using illustrations for the identification of mushrooms. Dr. Smith's advice and suggestions on the eating of mushrooms, based for the most part on his own personal experiences, should be read by all who plan to collect and eat mushrooms.

CLARK T. ROGERSON

NEWS, NOTES and COMMENTS

Excerpts from

The President's News Letter

Dr. William C. Steere has been busy getting acquainted with the staff and with the general operations of the Garden. In addition to this, and in connection with his directorship, he has assumed the following responsibilities—membership on the Board of Directors of the Horticultural Society of New York; the Advisory Committee on Institutional Research Grants of the American Cancer Society; the Faculty Advisory Committee of the Institute of Nutrition Sciences; the Advisory Panel for National Science Foundation Summer Institute Program — 1958; the Advisory Panel to evaluate proposals, Systematic Biology Program, National Science Foundation; Planning Committee for Second Directors' Conference of Research Museums; Committee to evaluate National Science Foundation Post - doctoral Fellowships—1958.

On August 25, Dr. Steere was elected President of the Botanical Society of America. He participated in the principal symposium of this Society, serving with Kenneth V. Thimann, Professor of Biology at Harvard University, and W. Gordon Whaley, Professor of Botany and Dean of the Graduate School of the University of Texas, held during the annual meeting of the American Institute of Biological Sciences at the University of Indiana, August 24-28, 1958.

Dr. H. W. Rickett, Dr. Richard M. Klein, Dr. David J. Rogers, Dr. Clark T. Rogerson, Dr. Arthur Cronquist, and Dr. John Wurdack also attended the Institute. Dr. Rogers presented a paper on "Electronic Computation Applied to Research with *Manihot esculenta,*" Dr. Cronquist papers on "The Divisions and Classes of Embryophytes," also "The Divisions and classes of Thallophytes," and Dr. Steere a paper on "Some New Mosses from Arctic North America."

Dr. William Silverman, B.Sc., City College, New York, M.Sc., and PH.D., University of Minnesota, has joined the staff of the Garden's Research-Laboratory and is working with Dr. Marjorie Anchel. Mrs. Nieva Della Rosario, M.Sc., from the University of Tennessee on Philippine mosses, is identifying and mounting Dr. Steere's collection of mosses. Rachel DeNoia, a Hunter College student, has been mounting moss specimens in the Herbarium this summer.

During the summer, two high-school students, Marian Davis and Dorothea Bedigian, served as full-time volunteers in the Library. Miss Bedigian, who hopes to become a librarian, will continue to work in the Library on Saturdays during the school year.

Mrs. Madison H. Lewis, Chairman of the Volunteer Associates, and Mrs. Henry S. Presco, Chairman of the Theater Benefit Committee, anounced that "Daarlin' Man" was selected to replace the cancelled "Grand Hotel"—the date, February 10, 1959. Mrs. Wylie T. Kinney, Mrs. Herbert Greeff, and Mrs. William Bayhe, Chairmen of the Holiday House Tour (with an international theme) on December 4, 1958, have so far secured the homes of Sir Arthur and Lady Cohen (English); Mr. and Mrs. Jayne de Barros (Brazilian); and Mr. and Mrs. Erick Kronval (Swedish).

Paleobotanist at the Garden. Dr. Herman F. Becker will organize and catalogue the paleobotanical collection of The New York Botanical Garden and will continue his research on the Tertiary Ruby Flora of southwestern Montana during the next two years under a grant from the National Science Foundation.

Dr. Becker received the Ermine Coles Case Award for Scholarship, the University of Michigan, for outstanding doctoral dissertation in geology for the year 1956-57 and a research grant of two thousand dollars for paleobotany, summer 1957, from the Geological Society of America.

Born in Germany, Dr. Becker came to this country in 1930 and for nine years was horticulturist's assistant at the Brooklyn Botanic Garden; from 1939-1954, he was science assistant at Brooklyn College, Department of Biology. Since 1949 he has been a lecturer in the School of General Sciences, Department of Biology, Brooklyn College, and from 1956 to date an instructor of this department. He was graduated cum laude from Brooklyn College in 1947, received his Master's in botany and geology from Columbia University in 1952, and his Ph.D. in paleobotany from the University of Michigan in 1956.

Dr. David D. Keck, Assistant Director and Head Curator of The New York Botanical Garden, is taking a year's leave of absence starting October 6 to become program director for systematic biology, National Science Foundation. Dr. Keck's headquarters will be in Washington, D. C. However, he will travel extensively in connection with his new responsibilities. His office is in charge of reviewing applications for individuals and groups for research grants.

CALIFORNIA FLORA, the book which Dr. Keck has co-authored with Dr. P. A. Munz, Director of the Rancho Santa Ana Botanic Garden, will be published by the University of California Press early next year.

Dr. H. W. Rickett, Bibliographer, will serve as Acting Assistant Director of the Garden and Dr. Bassett Maguire, Curator and Coordinator of Tropical Research, will serve as Acting Head Curator during Dr. Keck's absence.

Medal to the Garden. The New York Botanical Garden was one of twelve recipients in this country of a bronze medal issued to commemorate the 150th anniversary of the founding of the Jardin Botanico of Rio de Janeiro. The recipients selected by Dr. Campos Porto, Director of the Jardin Botanico, were, in addition to The New York Botanical Garden: Fort Worth (Texas) Botanic Garden, the Brooklyn Botanic Garden, Chicago Museum of Natural History, Nat J. De Leon of Miami, Florida, Gray Herbarium of Harvard University, Mrs. J. Norman Henry of Gladwyn, Pennsylvania, Edwin A. Menninger of Stuart, Florida, Missouri Botanical Garden, Rancho Santa Ana Botanic Garden, the John J. Tyler Arboretum, and the University of Washington Arboretum. Dr. George H. M. Lawrence, Director of the Bailey Hortorium, was entrusted with the presentation of these medals.

Fossils on Martha's Vineyard. Frank C. MacKeever, Custodian of the Herbarium of The New York Botanical Garden, while vacationing with Mrs. MacKeever this past summer on Martha's Vineyard and Nantucket, indulged in plant collecting. Mr. MacKeever had expected to collect live specimens deviating from mainland varieties — and he did so. But he also found the unexpected—some interesting fossils which he brought back with him to the Garden. Because the material is so thoroughly carbonized or permineralized, detailed identification is difficult. However, the pieces that appear to be large flattened stones, called quahogs by the Indians, are tentatively identified as cephalopod shells of the phylum Mollusca, and probably related to the pearly Nautilus. The age is probably Cretaceous. A large clay nodule, when split, revealed fragments of several deciduous leaves; from their general character and appearance, the age of these imprints could be late Cretaceous or early Eocene.

Another fragment with a large branch impression, showing only faint structural lines, might have affinity with *Equisetum*, a forebear of the modern horse-tail. On the other hand, lacking diagnostic detail, this specimen could be relegated to some branching, tree-like plant.

Additional collecting and further study, according to Dr. Herman F. Becker, who has made a preliminary examination of these fossils, should shed light on their taxonomic position.

Dr. Edmund H. Fulling, Editor and publisher of the Botanical Review, was appointed Honorary Curator of The New York Botanical Garden by the Board of Managers, at its meeting held on September 24, 1958, in appreciation of his many services and contributions to the Garden

The Advisory Council, at a meeting of its executive committee on September 24, 1958, elected Mrs. Edward C. Delafield, of New York City, and Mrs. Wilcox B. Adsit, of Irvington, New York, to membership in the Council.

Irving Knobloch, of the faculty of the Department of Botany, Michigan State University, used the facilities of the Library and of the Herbarium in September in his research on ferns. Dr. Knobloch gave an illustrated talk to the Garden's staff about his recent collecting trip in Chihuahua, Mexico.

Howard Bayne, of New Vernon, New Jersey, member of the Board of Managers of The New York Botanical Garden, died on August 24, 1958, at the age of seventy-nine.

Mr. Bayne, who was born in Belfast, Ireland, was brought to this country in 1881 by his father who founded the Seaboard National Bank. He was graduated from Columbia University in 1901 with a degree in electrical engineering and remained there two years as assistant to Michael I. Pupin, while the latter developed his electrical wave mathematical theories and his loaded coil for long-distance telephone use. He then followed his father's foot-steps into banking, becoming treasurer, then vice-president of Columbia Trust Co., and remaining with it until the bank was merged with the Irving Trust Co. When the Seaboard National Bank was absorbed by the Chase National Bank, Mr. Bayne was made a director and continued as a director when the bank was renamed Chase Manhattan Bank. He held directorship in a number of organizations, including the Prudential Insurance Company of America, of which he was a director for twenty-five years.

Mr. Bayne is survived by his widow, the

former Louise Van Beuren; two daughters, Mrs. Imrie de Vegh and Mrs. Geoffrey T. Hellman, and four grandchildren.

Significant Development in Plant Classification Technique. A new technique in plant classification was revealed at the annual meeting of the American Institute of Biological Sciences held at Indiana University, August 24-28, 1958. This new technique, which uses a large-scale IBM 704 data processing system to classify plants automatically according to their individual characteristics, was developed by Dr. David J. Rogers, Curator of Economic Botany of The New York Botanical Garden, and Dr. T. T. Tanimoto of the Mathematics and Applications Department of International Business Machines Corporation. Up to one hundred characteristics — including size, color, root structure, leaf structure, and stem structure, are recorded in IBM punched cards. Decks of these cards are then fed into the IBM 704 computer. The 704 digests this vast assemblage of data and automatically classifies the plants into natural groups or clusters, with each cluster being determined by the overall physical similarities of the plants that comprise it.

In a paper delivered at the meeting, Dr. Rogers and Dr. Tanimoto described the application of the new computer technique to the classification of one hundred varieties of *Manihot esculenta,* the tropical food plant whose edible root-stocks form the basic diet of the tribal Indians of South America. Punched cards containing data on fifty physical characteristics of each variety of *Manihot* are fed into the IBM 704; the computer analyzes these characteristics and classifies the varieties into natural groups. The classification arrived at by the computer could also be used to ascertain the various physical characteristics of the *Manihot* that are closely related to high-food yield, which, in turn, could prove useful in the development of higher yield varieties.

Dr. Rogers and Dr. Tanimoto emphasized that their new plant classification technique could also be applied to other areas where the classification of objects is desirable in terms of the over-all similarities of characteristics. For example, in the medical field, diseases might be automatically classified on the basis of similarity of various measurable symptoms.

Although the new classification technique was developed specifically for use with IBM's 704 computer, it was pointed out that the same principle can be used with any large-scale computing system.

Garden Therapy in New Jersey. The Garden Therapy program of the Garden Club of New Jersey, following the pattern set by the National Council of State Garden Clubs, Inc., is responsible for two Green Thumb Corps, one at the VA Hospital at Lyons, a neuro-psychiatric hospital with a capacity of over two thousand beds, and one at the VA Hospital at East Orange, a general hospital with nine hundred and fifty beds, including psychiatric wards and wards for the physically handicapped.

At least two Green Thumb Corps volunteers are assigned daily to the greenhouse at Lyons. They arrange, through their garden clubs, for patients to participate in local flower shows. Consequently, the patients are participating in the preparation of many shows during the season. The hospital established an annual flower show three years ago; this is open to the public in competition with the patients.

In the VA Hospital at East Orange, a group of club members is selected, oriented and trained to deliver the flowers throughout the hospital unassisted.

Seventy-seven clubs of the Garden Club of New Jersey work in local institutions, in state and county hospitals, and in those for specialized treatment as, for example, orthopedic hospitals, homes for shut-ins, the aged, blind, retarded children, paraplegic and cerebral palsy sufferers. One club has organized a garden club at the Clinton Reformatory for Women; another carries an extensive program at Matheny Home for spastics and has recently formed a garden club there—a working therapy.

The Garden Club of New Jersey supplies Christmas trees and bundles of greens, also wreaths and swags made by clubs, and altars and chapels are decorated at Christmas and at Easter. Flower arrangements are made throughout the year for the lobby and wards.

The field of garden therapy opens a wide door where knowledge and normal attitudes can render a service that cannot be duplicated and where garden club members themselves gain far more than they give.

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MEDITERRANEAN

46 day tour led by Prof. Donald J. Bushey, Department of Horticulture, Cornell University. Sail on SS Cristoforo Colombo, March 27.

The sunny southern route to Sicily, Italy, Italian-Swiss Lake District, the Riviera, France, the International Floralies in Paris. $1470.

WESTERN EUROPE

45 day tour led by Prof. Clark L. Thayer, former head of Dept. of Floriculture, University of Massachusetts. Sail on SS Nieuw Amsterdam, April 24.

Holland at tulip time, Belgium, Paris in the spring, French chateaux country, South England, Chelsea Flower Show in London. $1230.

BRITISH ISLES

41 day tour led by Dr. Carrick E. Wildon, Professor of Horticulture, Michigan State University. Sail on RMS Queen Elizabeth, May 13.

South England, Chelsea Flower Show in London, the lake country, the midlands, Wales, South and North Ireland, Scotland. $1291.

SCANDINAVIA

48 day tour led by Dr. Ernest K. Thomas, Executive Secretary, Rhode Island Horticultural Society. Sail on RMS Queen Elizabeth, June 10.

London, The Fjords of Norway, Sweden's Lake Country, Danish "fairytale countryside," Holland, Belgium, Paris. $1630.

NOTE: Tours of Western Europe, British Isles and Scandinavia may be taken separately or in sequence, at a saving, as they connect with each other.

HAWAIIAN ISLANDS

33 day tour led by Prof. Victor H. Ries, Department of Horticulture, Ohio State University. Sail on SS Lurline from San Francisco, May 4.

Garden Paradise of the Pacific in the spring flower season. Hawaii, Maui, Kauai, Oahu, Waikiki Beach, Honolulu. $1265 plus tax.

THE ORIENT

33 day tour led by Dr. Ernest K. Thomas, Executive Secretary, Rhode Island Horticultural Society. Fly from San Francisco, April 2.

Hawaiian Islands, Japan at Cherry Blossom Time, fascinating Hong Kong, exotic Thailand (Siam), Cambodia. $2485 plus tax.

MEXICO

22 day tour led by Mr. Phillip Clark, horticultural author and Editor, Horticulture Magazine. Fly from New York City, March 14.

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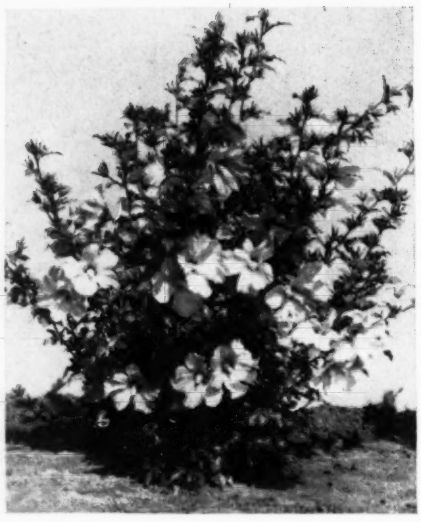

Althea 'Blue Bird' (plant patent No. 1739) is vigorous in growth, upright in habit, and a prolific bloomer. The flowers, measuring five inches across, are wide open and resemble big blue saucers. 'Blue Bird' is a fine addition to the small list of summer-flowering shrubs. Wayside Gardens is introducing Althea 'Blue Bird' and this first year offers plants eighteen to twenty-four inches high; they will bloom the year after planting.

Wayside Gardens 1959 Introductions include the azalea hybrids developed by the late Lionel de Rothschild on his estate, "Exbury," near Southampton, England. Back in 1918 Mr. de Rothschild obtained from Anthony Waterer the choicest of his famous Knaphill strain of azaleas. The Knaphill strain resulted from crossing American species, notably *R. calendulaceum* and *R. occidentale*, with selected mollis and *japonicum* types to get greater hardiness, a wider range of colors and larger flowers.

As the best of these hybrids bloomed, Mr. de Rothschild would painstakingly select two parent plants from each color group; these selected parents would then be crossed. As each succeeding generation flowered, he would destroy all except the few that met his exacting standards. The azaleas designated as de Rothschild Supreme Selections (name copyrighted by Wayside) have been propagated at Wayside Nurseries, in Mentor, Ohio, and are available only from them. The broad petaled flowers up to four inches across, come in pure white, soft pastel to deep yellows, rich oranges and fiery reds.

Wayside Gardens is introducing the flowering crab 'Red Jade', which was originated in the Brooklyn Botanic Garden. It is a very desirable small tree, semi-weeping in habit, with blush-white flowers in spring and brilliant fruit in autumn.

Two horticultural varieties of the locust or false acacia, *Robinia pseudoacacia*, can be procured from this nursery—friesia and fastigiata. The former has golden-yellow foliage; the young shoots are almost orange, and in fall the leaves change to coppery yellow. It is a rare and handsome tree recently introduced from Europe. The form fastigiata is pyramidal in habit, as slender as the Lombardy poplar, and the slightest breeze sets its lovely leaves in motion. It is an ideal tree for a limited area.

New Varieties of Lantana. Monrovia Nursery, Azusa, California, have recently introduced six patented lantana varieties: 'Confetti,' with yellow, pink and purple flowers; 'Cream Carpet' with rich green leaves and cream-colored flowers having a light yellow throat; 'Gold Rush Improved,' with golden-yellow flowers a pleasing contrast to the deep green foliage; 'Pink Frolic' with pink and yellow flowers; 'Spreading Sunset' with vivid orange red flowers and bright green leaves; and 'Sunburst' with bright yellow flowers. These new varieties will be available at many nurseries throughout the country.

All-America Camellia. The All-America camellia for 1959 is 'Sweetheart,' a pink formal double *C. japonica*. It was placed on trial in 1953 and survived temperatures of 15° F. at Atlanta, Georgia. This new variety scored high for habit, vigor, foliage, flower form, substance, color and fragrance. 'Sweetheart' makes a bushy compact shrub with dark green, thick-textured foliage; buds are produced evenly throughout the plant and, as it ages, are borne generously. 'Sweetheart,' which is a sport of 'Bleichroeder,' has been under observation in California since 1943.

Re Chinsegut Hill: Miss Lisa von Borowsky, who planted many of the interesting trees at Chinsegut Hill when Colonel Robins owned this estate, was greatly interested in the article by Joseph Monachino in the September-October issue of The Garden Journal. We quote from her letter to Mr. Monachino:

"I do want to let you know that you and Dr. Gleason are quite right in assuming that an Indian would not entertain such subtle thought, as the meaning given to the word Chinsegut. Literally translated, it means 'the place of dead things.' Colonel Robins' sister, the one-time actress and then writer, had a vivid imagination and she chose to interpret the word in her own way. I do not have here in Winter Park my Innuit Indian dictionary, and so cannot give you a guarantee on the name Chinsegut, but I am always particular in saying that this is the 'interpretation' of the word and not the literal translation.

"I am so glad that Chinsegut Hill is serving such a useful purpose. Plant life has always been one of its main attractions and, as you know, Dr. Small used to come three times a year and collect from there..."

BOOK REVIEWS (from page 217)

AMERICAN ROSE ANNUAL, 1958. 266 pages, 16 color plates. Published by the American Rose Society, Columbus 14, Ohio. $5.50 with membership

With the membership of the American Rose Society being nation-wide, it's quite natural that a third of the thirty-odd articles in this yearbook have to do with rose growing methods, as practised by skillful amateurs, in far-flung parts of the nation, from New Hampshire to California. Through these intimate exchanges of knowledge, rose fanciers glean new ideas on many phases of rose culture, such as mulching materials, pruning, winter protection, feeding, and the selection of reliable varieties.

Other articles report results of the latest research on pest control with new materials, rose breeding for hardiness, rust prevention, and a forthcoming revision of rose classification.

Following an annual custom, a fat 130-page section, called the Proof of the Pudding, bulges with digested comments by no less than one hundred and ten observers on the actual performance of about one hundred varieties of recent introduction. These critical comments, grouped under each variety name by geographic zones, are read closely by amateurs who plan to purchase some of the novelties.

The sixteen full-page color plates of new roses add materially to the lasting value of this volume in every rosarian's library.

PAUL F. FRESE
Editor of Publications
Brooklyn Botanic Garden

THE HEMEROCALLIS JOURNAL, 1958 YEARBOOK ISSUE. 216 pages, illustrated. Published by the Society at 7714 Fairfield Rd. N., Minneapolis 12, Minn. $5.00 with membership

Named daylily varieties number into the thousands, and new ones by the score are being introduced every year. This is because making crosses and raising seedlings is so easy that any amateur can do it—and great numbers do.

This trend influences the nature of the material in this yearbook. On the one hand, there is much discussion and reporting on personal likes and dislikes for varieties. Then there are numerous articles on hybridizing, storing pollen, and the genetics of hemerocallis.

One of the most thoroughly enjoyable and informative sections of this nicely printed book is sixteen pages of short, practical notes on many subjects, gleaned from Round Robin letters which are circulated by members of thirty-six Robin clubs.

The rise and fall of popularity of varieties is of special interest to all hem fans. 'Evelyn Claar,' a pink variety, has the distinction of having remained first in the popularity poll for the last three years. Next, in the "100 best" list are: 'Salmon Sheen,' 'High Noon,' 'Painted Lady,' 'Pink Damask,' 'Jack Frost,' 'Ruffled Pinafore,' 'Fairy Wings,' 'Prima Donna,' and 'Colonial Dame.'

Society matters and reports do fill some space in this paper covered book, but there's enough solid fare to please everyone.

PAUL F. FRESE
Editor of Publications
Brooklyn Botanic Garden

CONTROL OF THE PLANT ENVIRONMENT. Edited by J. P. Hudson. 240 pages, illustrations, index. Academic Press, New York. 1957. (Printed in Great Britain.) $7.50

A rather exhaustive survey of environmental factors and their control as these

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affect the growth of crop plants. Some fifty three technical papers cover such phases of the subject as effects of the environment on plants, the control of environmental factors for plant experimental work, installations for the control of plant environments, and demonstrations. These emanated from the Fourth Eastern School in Agricultural Sciences, held at the University of Nottingham School of Agriculture in April 1957. The contributions are from British laboratories with the exception of a few from Holland. They are of importance to anyone interested in controlling the plant environment experimentally, from lamps and wind tunnels to growth rooms and phytotrons.

DAVID D. KECK

THE PHYSIOLOGY OF REPRODUCTION IN FUNGI. Cambridge Monographs in Experimental Biology No. 6. Lilian E. Hawker. 128 pages, indexed. Cambridge University Press, New York. 1957. (Printed in Great Britain). $3

This volume is the sixth in the series of Cambridge monographs in experimental biology and is the first in this series to deal with the fungi. This slender book consists of one hundred twenty-eight pages of which seventy-six are devoted to a discussion of the effects of various environmental and nutritional factors on reproduction, fifteen to a description of the types of reproductive structures and their modes of growth, and twenty to a consideration of the mechanisms of sexual differentiation.

This book provides its reader with a full summary of the little that is known about reproduction in the fungi, and an excellent bibliography for further pursuit of the subject.

ALMA W. BARKSDALE

INTRODUCTORY PLANT SCIENCE. Second Edition. Henry T. Northen. 718 pages, illustrated, indexed. Ronald Press, New York. 1958. $6.75

The second edition, one hundred and seventeen pages larger than the original one published in 1953, incorporates the latest advances in the plant sciences. Included are such subjects as the effect of gibberellic acid on plants, the breaking down and reconstruction of viruses, chromatography and sexual reproduction in bacteria. Many new drawings were especially prepared for this edition and the most attractive and educationally useful halftones were retained from the earlier edition. Review questions to increase the book's usefulness for students have been added at the end of each chapter. A self-pronouncing glossary has also been added as a handy reference. Without doubt, this book is one of the very best on the plant sciences for the beginning student.

P. P. PIRONE

RHYTHMIC AND SYNTHETIC PROCESSES IN GROWTH. Dorothea Rudnick. 217 pages, illustrated, indexed. Princeton University Press, Princeton, N. J. 1957. $7.50

This book resulted from the Fifteenth Symposium of the Society for the Study of Development and Growth held at Brown University, Providence, R.I., in 1956. The National Science Foundation subsidized the Symposium. The book is composed of three divisions — I. Tissue Culture; II Cyclic Activity; and III. Biochemical Evolution. The first division of the book deals with tissue culture for animals and plants and the production of viruses. The second division deals with cycles of growth of lower organisms and through higher plants and animals. The rhythm of animals is more or less independent of temperature while the rhythm in plants is affected by both temperature and day length. The third division deals with the origin of life, evolution, photosynthesis and speculates with "Life on Other Planets."

Each of the ten chapters has a bibliography. There is also a cumulative index showing a list of all authors and subjects published for all symposia since the first in 1939. There is a good subject index which enhances the value of the book.

P. W. ZIMMERMAN
Boyce Thompson Institute for Plant Research, Inc. Yonkers, N. Y.

THE EXPERIMENTAL CONTROL OF PLANT GROWTH. Frits W. Went. 343 pages, XXV plates; indexed. Ronald Press, New York. 1957. $8.50

The Earhart Plant Research Laboratory at the California Institute of Technology was designed to experiment with plants under completely controlled environmental conditions. It consists of six greenhouses, fourteen artificially lighted rooms, ten dark rooms, suitable work areas, various special rooms, laboratories and offices. The temperature of each growing area is controlled independently by rapidly circulating air which is blown up through the floor. Outside air is filtered to keep out insects, spores and smog; heated by radiators and cooled with a spray of chilled water. A film of water flows over the roof of the greenhouses to absorb much of the infra red radiation.

Considerable detail of the construction and operation of the Laboratory is given in the first ninety pages. In the next one hundred pages are described some of the more important results obtained with a number of individual species under controlled conditions. The last one hundred and thirty pages are devoted to a topical discussion of various phases of growth and physiological processes. Here there is some repetition of previously described phenomena but with more emphasis on the process and the advantage of the controlled conditions in studying the process.

They have been able to grow plants which are remarkably uniform, so that results of variations in environment are particularly noticeable. A number of new facts have been learned and a much better insight into the behavior of many plants has been facilitated. The book argues strongly for the development of other similar laboratories for a better understanding of the reactions of plants to the many components of their environment.

HAROLD H. CLUM
Dept. of Biological Sciences Hunter College

PLANT LIFE. A Scientific American Book. 237 pages, bibliography. Simon & Schuster, New York. 1957. $1.45

This paper-bound book contains twenty botanical articles which originally appeared in the SCIENTIFIC AMERICAN from 1949 to 1957. The authors are all competent scientists, and include such famous names as Dobzhansky, Mangelsdorf, Rabinowitch, Thimann, Went, and White. Each article is independent of the others and is written in popular style, with a minimum of technical terminology. Hybrid corn, strangler trees, growth substances, photosynthesis, autumn coloration, and the plants of Krakatoa are some of the subjects. Being designed for interest rather than textbook completeness, they cover only what the authors wish to write about. Anyone with even a parlor in-

Mrs. Mary Louise Sutton, who had been a member of the secretarial force since 1944, was honored at a luncheon in the Snuff Mill on August 28, 1958, by fellow employees of The New York Botanical Garden before leaving for her new home in Florida. Mrs. Sutton worked under Dr. A. B. Stout, Dr. B. O. Dodge, and for the last eight years Dr. P. P. Pirone. Seated at the table, left to right, Dr. Dodge, Dr. Alma Barksdale, Dr. Pirone, Mrs. Sutton, and Dr. William C. Steere, Director of the Garden.

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terest in botany should find them absorbing reading.

ARTHUR J. CRONQUIST

MORPHOLOGY OF PLANTS. Harold C. Bold. 669 pages, illustrated, indexed. Harper & Bros., New York. 1957. $8

In the age of science in which we live, with its emphasis on intense specialization, few people are qualified by training, by temperament, and by the exigencies of their academic stations to write a book of broad and liberal scope. Professor Bold is, happily, one of these few. MORPHOLOGY OF PLANTS is a large volume, designed to supplement—or antidote—the diluting effects of "general education" and "survey" courses, and to prepare students to cope with the rigors of more advanced texts of less extensive outlook.

The present volume covers the whole plant kingdom, which now includes twenty-four divisions. Of these eight are devoted to the algae, five to the bacteria, slime molds and fungi, one to the liverworts, one to the mosses, four to the fern allies and ferns, four to the erstwhile gymnosperms, and one to the flowering plants. The four original divisions of Eichler have therefore now been expanded to twenty-four, of which the flowering plants, which have inherited the earth, are only one. There is no doubt that the polyphyletic scheme here presented comes far closer to the truth, especially if one can conceive, in this space age, of watching from afar life develop on this planet from its very beginnings to the present. In spite of the pedagogical advantages of the relatively simple Eichler system, there can hardly be any question that many of the lower groups have had long and independent histories, that the fern allies preceded the ferns, that the ferns are close to the seed plants, that the gymnosperms are not a homogeneous group, and that the flowering plants, in spite of their numbers and diversity, are interrelated.

Professor Bold uses the "type method," presenting each group by means of illustrative types. Although the book is large, so is the plant kingdom, and since the types have been chosen judiciously this method is effective. They are copiously illustrated with stippled and line drawings and with halftones, most of which are original. General features, summaries and conclusions are also presented for the various groups.

In addition to the clear and adequate consideration given to each of the twenty-four divisions of the plant kingdom, numerous other topics are also treated, some of them extensively, such as "The Origin and Development of Living Things," "The Classification of Plants," fossils and their importance in interpreting the living forms. Subjects of recent interest are considered. One does not search in vain, for instance, for material on *Chlamydomonas*, antibiotics, *Neurospora, Pilobolus*, apogamy, apospory, homologous and antithetic alternation of generations, origin of the angiosperms—to mention just a few. Discussion questions are given at the ends of the chapters, and reference works are cited.

Unlike most of his scientific colleagues, Professor Bold writes well. The style is clear, direct and easy to comprehend. But more important, the student or the reader gains the impression that this is not merely a collation of facts: it is a thoughtful presentation of the vast subject of plant morphology, written after years of contemplation of the topics covered, and by one who is both scientifically and philosophically competent to do them justice.

EDWIN B. MATZKE
Dept. of Botany
Columbia University

Plant Buyer's Guide, sixth edition, published by the Massachusetts Horticultural Society, price $15.00, contains sources of plants in Europe, South Africa, South America, Canada, as well as in the United States. The Guide is an outgrowth of PLANT BUYER'S INDEX, published in 1926 by J. Woodward Manning; it contained some six thousand hardy and tender trees, shrubs, and herbaceous plants. This sixth edition of the PLANT BUYER'S GUIDE lists over thirty thousand plants and ten times as many sources. Supplements will be issued from time to time.

"FIFTY YEARS OF BOTANY" (from page 213)

retired men and women who have time to devote to plants. He suggests that "these trends offer a great opportunity to botanists, but with the opportunity is an obligation ... the responsibility of presenting botanical knowledge with a selection of content as can be of value to individuals affected by these changes ..."

From Chapter 31, "More Plants for Man" by W. H. Hodge:

"Some one has said that our modern civilization, at the threshold of the atomic age, is still content to sow and harvest the crop plants of the Stone Age. It does seem remarkable that of the thousands of species of higher plants known to science today, relatively speaking only a handful, mostly of ancient lineage, are the ones still widely cultivated as our major crops ...

"We have long known that plants exist which produce fibers, proteins, latex and waxes, vitamins, alkaloids and glucosides, pigments, tannins, and oils. Who is to say, though, that we are utilizing the best species available for each purpose? Medicinal aloe is still collected primarily from the two species known to the ancients, who discovered this drug. Is this to admit that among the scores of *Aloë* species described in recent times a better drug source may not exist? Man simply has not investigated the possibility. And so it goes with many of our economic species. The aloe-like century plants (*Agave*) of the New World constitute another good example; sisal and henequen, important fiber-yielding species of commerce, were known and grown by Mayan and Aztec Indians. Yet among the several hundred agaves known today, many of which were unknown to those Indians, there may well be producers of better fiber.

"Botanists have classified our plants so that we may recognize one from another and associate whole groups of related kinds, but what potential use the greater portion of these may have for man is basically still a matter of investigation ..."

"Today there is still much to be desired in the line of *coordinated* and concerted effort to discover new sources of utility in plants. Coordination is emphasized because much, indeed practically all, of what we have learned in this field has come by chance. For example, within but a decade or two we stumbled upon certain plants whose rotenone content has immense insecticidal value, yet these species have been known and used as fish poisons by primitive tropical peoples for hundreds of years. Curare, that South American poison which is now valued by modern medicine for use in shock therapy, was also discovered in a similar fortuitous manner.

"Support for research in bringing together the tremendous back-log of isolated and scattered reports on new potentially economic plants and for their analysis or re-examination in relation to chemical constituents is a field which offers great promise in the development of more plants for man ...

". . . Nowadays, few would argue against the tremendous costs of atom-smashing equipment. Not so many years ago requests for such would have received scant public consideration. Research in the potential utility of the great bulk of the world's plant population is where atomic research was twenty-five years ago. It is hoped that botanical scientists in general and economic botanists in particular can be more articulate in describing the needs and benefits of this type of research in relation to its benefits to mankind ..."

From Chapter 23, "Horticulture is a Great Green Carpet that Covers the Earth" by H. B. Tukey:

"From the air the earth looks green—a great green mantle stretched out protectingly and warmly over the good earth. This is a proper concept, because without the chlorophyll that gives this green color, the good earth would not be so good. There would be no life, no coal or wood or oil for fuel, no foodstuffs or fiber, and remarkably little shelter. The green mantle has that wonderful property of being able to capture the energy of the sun and tie it up in what we call the products of photosynthesis — the sugars and the starches and other organic compounds made from the carbon dioxide of the air. No, there would be no plant life and there would be no animal life. The *good* earth might perhaps more properly be called the *green* earth. This is the sort of thing with which Horticulture deals—a great green mantle or carpet covering the earth.

On this green carpet of Horticulture are gathered all kinds and conditions of men. There are (1) those interested in the science, or biological, side of Horticulture — botanists, chemists, physicists, geneticists, plant breeders, soil experts and the like; (2) those interested in the business, or affairs, side of Horticulture—seedsmen, nurserymen, florists, fruit growers, vegetable growers, produce merchants, canners, freezers, and the like; (3) those interested in the home and art side of Horticulture—the amateur gardener, the housewife, and all those who enjoy plants for the satisfaction they derive from them.

Dr. Tukey discusses the "science" side, the "affairs" side, and the "artistic, esthetic and social sides" of horticulture; then concludes,

"As scientists working in this field, horticulturists are biologists and must tie to biology, but as they are also horticulturists, they provide a bridge, a connecting link, the liaison between biology and the business and art sides. As L. H. Bailey has well stated, 'The horticulturist is the man who joins hands with the plant biologist on the one side and with the affairs of men on the other, and whose energies are expended in every way in which plants appeal to men.' The horticulturist could do no better than to chart his course with this as his compass."

FIFTY YEARS OF BOTANY. Edited by William C. Steere. 638 pages, illustrated, indexed. McGraw-Hill Book Co., New York. 1958. $10

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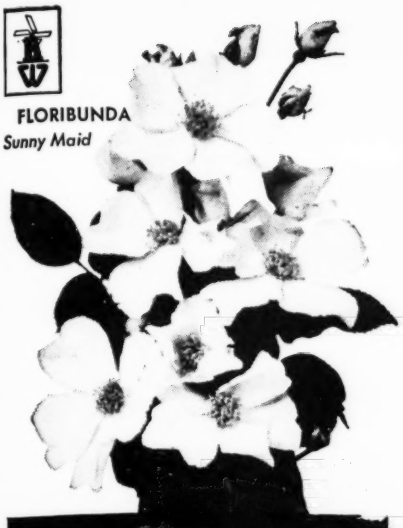

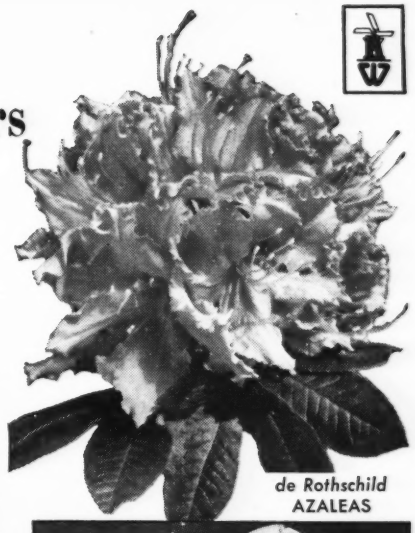

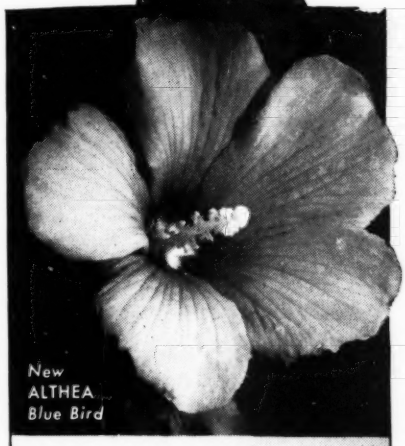

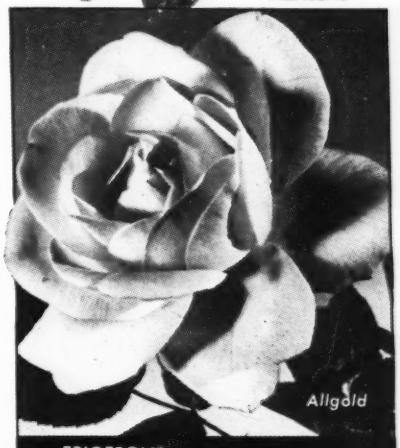

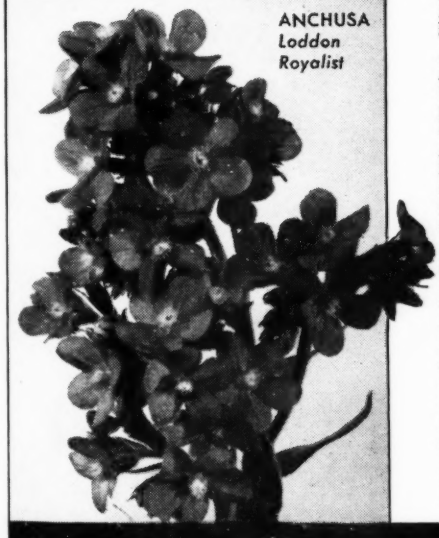

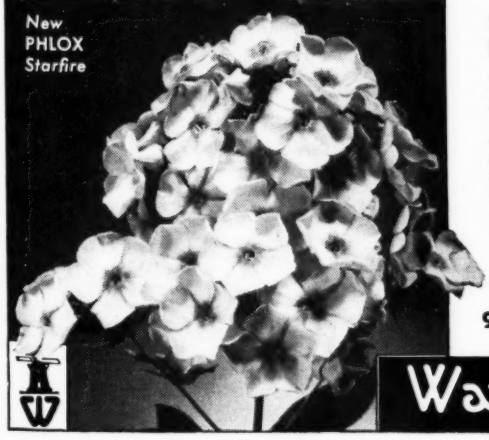

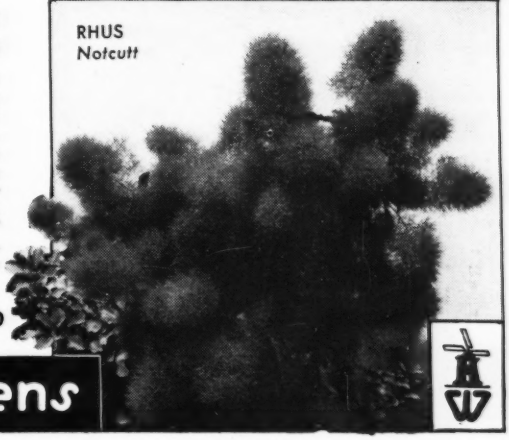

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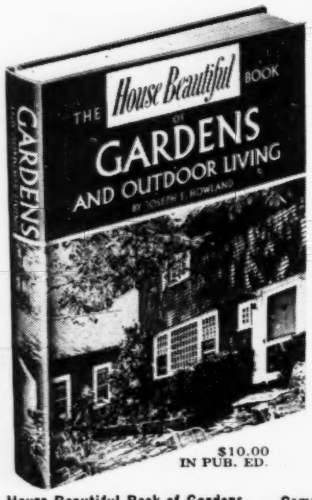

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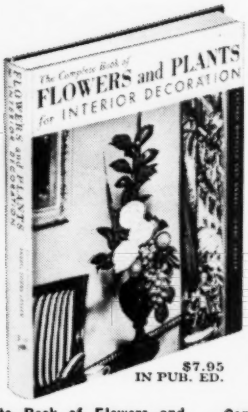

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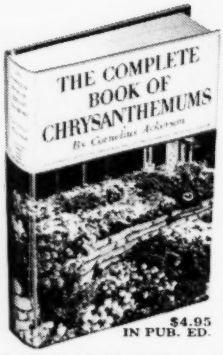

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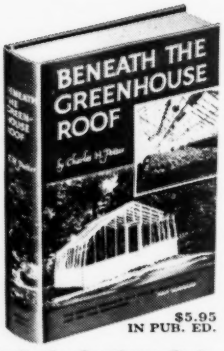

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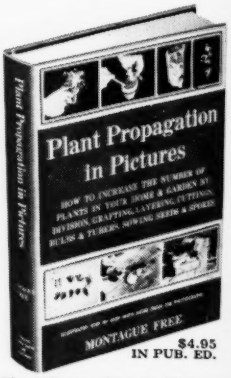

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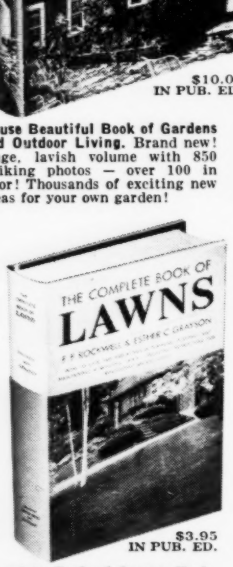

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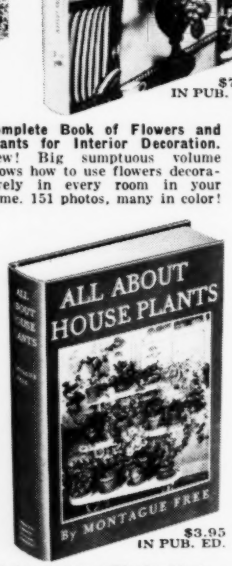

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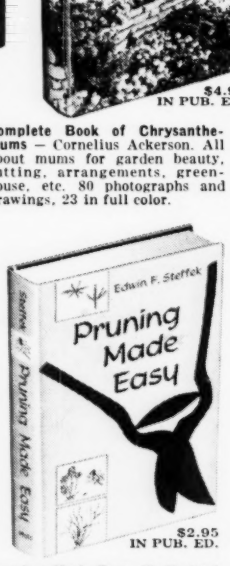

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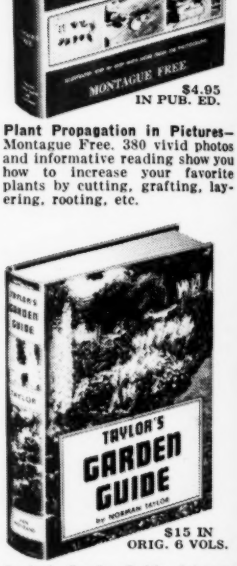

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